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REPORT OF THE ASSOCIATION'S WORK DURING 1937
(Part II)

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To Employed Sanitary Inspectors

CERTIFICATE IN SANITARY INSPECTION (CANADA)

C.S.I.(C.)

THE minimum qualifications for registration for the examinations for the certification of sanitary inspectors, conducted by the Canadian Public Health Association, is the completion of three years of high-school work or its equivalent in secondary-school education. After December 31, 1938, every candidate desiring to take the examinations must meet this requirement.

Realizing that many of those who have served in sanitary inspection for a number of years may desire to obtain the qualifying certificate but may not have the preliminary education required by the Committee, provision has been made, since the inception of the examinations in 1935, to permit those who have been employed as sanitary inspectors for at least one year to take the examinations without being obliged to meet the preliminary educational requirement. This exception has applied only to employed sanitary inspectors.

The Committee has given due notice that this privilege will be withdrawn after December 31, 1938. This announcement is being made again in order that this information may be made known as widely as possible. Those registering on or before December 31, 1938, will be permitted to take the examinations in September, 1939. Employed sanitary inspectors who are thinking of obtaining the qualification are therefore urged to forward their applications before December 31, 1938.

Copies of the syllabus and regulations, application forms, and other information may be obtained from the Canadian Public Health Association, 105 Bond Street, Toronto 2, Ontario.

CANADIAN
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Some Public Health Needs in Nova Scotia

Presidential Address*

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WHAT tremendous changes have taken place in the realm of public health during the past fifty years! I can recall that period when my father practised in this capital city of our Province. When, as small children, my brother and I contracted diphtheria, the placard was on the door of our Hollis Street home, and every few doors had the same coloured placard. Many of the cases were seriously ill and there were many deaths, some of them among my childhood chums—friends who would never again try to steal a ride on the old street car on our way to Morris Street school. Contrast that picture with what we have to-day. Diphtheria has been almost eliminated as a result of the vigorous public health campaign and the general use of toxoid. However, although some of us have been using toxoid in our public schools, and in younger children, since 1927, there are many places in our Province where it has not been used. It was only last year that a nurse said to me: "Why should our school children not have this protection?" I replied, "Urge it and you will have it." She did so and was successful. Should we not, as medical health officers, see that this work is done, not only in our incorporated towns but in the rural districts as well?

If we, as medical health officers, did our part in this work of protection against diphtheria, our statistics in regard to this disease in Nova Scotia would be decidedly better. And here I want to say to every medical health officer, and

**Presented before a joint session of the Nova Scotia Health Officers Association with the Canadian Public Health Association, Halifax, June 20, 1938.*

I speak from personal experience: the Department of Public Health will co-operate with you in every way to protect your town and district against this disease, but you must do your part.

During the past century there has been a substantial increase in general life expectancy as a result of modern advances in hygiene and sanitation. Most progress has been recorded in the early years of life. Little improvement has occurred in the life expectancy of the older age-groups. Among numerous factors that may influence the life and health of the individual are heredity, diet, habits of work and thought, pleasures, climate, social position, profession, exposure to communicable diseases such as pneumonia, tuberculosis, syphilis, etc. The general aging of the population is partly responsible for the rise in the death rate from heart disease, since many who might have been victims of other diseases under former conditions of sanitation now succumb at older ages to heart disease. Elie Metchnikoff, an eminent student of longevity, said: "Human life does not last as long as it ought to in ideal conditions. We may predict that when science occupies the preponderating place in human society that it ought to have, and that when knowledge in hygiene is more advanced, human life will become much longer and the part of old people will become much more important than it is to-day."

Public health has in recent years made great progress. It is important to remember that many of the discoveries on which these achievements in public health have been based were contributed by physicians. The anti-tuberculosis movement was commenced by physicians. Much of the public health legislation has been proposed by the profession. Public health is a part of medicine. It is customary to speak of the practice of medicine as curative and preventive. One is, however, complementary to the other. I am sure we all agree that the physician of the future must increasingly practise preventive medicine. The physician must be the health adviser to the family. In the conduct of public health work the medical officer of health must enjoy the co-operation of every physician. To-day the public health program requires the services of the nurse, the public health engineer, the laboratory worker, and the sanitary inspector. Successful performance of their duties rests on a proper understanding of the underlying medical principles. Essential services for public health must be maintained at all times, and in times of economic stress an adequate public health program is of special importance. If an epidemic of typhoid fever, diphtheria, or smallpox should occur at such a time, the added financial loss might be disastrous. No community can risk the danger of an impure water supply or unsafe milk on the plea of economic stringency. Essential in the maintenance of public health activities is public support, which in turn rests upon the continuous education of the public in the whole field of health. The medical profession hopes for the day when the well-trained physician will enjoy fully the whole-hearted and intelligent co-operation of the layman. Given such collaboration and the present achievements of medical science, continuous advances in the control of communicable diseases and in the lengthening of life could be achieved.

What can we do as medical health officers to advance public health measures in Nova Scotia? We should aim to have, firstly, closer co-operation between the Provincial health authorities and the medical health officers throughout the Province; and, secondly, closer co-operation between the medical health officer and the board of health and the various municipal organizations that are interested in advancing public health measures.

In regard to the first objective, if a fully qualified representative from the Department of Public Health could personally visit every medical health officer on different occasions throughout the year and discuss with him some of his local problems, much practical help might be gained and the public in general would feel that we were doing our best to advance certain definite public health measures in our own communities.

Further, serious problems are constantly arising throughout our rural districts, which are under the jurisdiction of the county medical health officer. This official may live twenty or thirty miles from conditions that should have his immediate and continued attention. Such attention is in many cases almost impossible, no matter how efficient or conscientious he may be. The reasons are obvious. These facts are not given in a spirit of criticism, because I know how difficult some situations are, but to bring to the attention of all medical health officers that we must do everything we can to help surmount these obstacles, until the day comes when we can have full-time health services.

I believe that all medical health officers should have on hand for emergency use such sera as are required in poliomyelitis, epidemic meningitis, and diphtheria, etc., so that it would not be necessary to lose precious hours in waiting for a supply from headquarters. The Department of Public Health of this Province has made available sera and vaccines to the profession. The Department has made splendid progress and has given, and continues to give, valuable assistance in the whole field of public health.

In regard to closer co-operation between medical health officers, boards of health, and the citizens of the community, this in my opinion is essential if the whole-hearted support of responsible citizens, both men and women, is to be obtained. If you try to force through any important health measure without first educating your community and obtaining their interest and support, you will have to fight ignorance and opposition. As an outstanding example of the value of such co-operation, I should like to mention the experience of Wolfville. This town is the only town in the Maritimes requiring the pasteurization of all milk and cream. The by-law, which was passed in May, 1936, could never have been made law without a careful educational campaign which included the board of health, many town organizations, the farmer-producer, the prejudiced citizen, etc. We encountered a great deal of opposition but we persevered and finally succeeded. An account of the effort was published in the January 1937 issue of the Nova Scotia Medical Bulletin. The Department of Public Health of the Province has done much to ensure good and pure water supplies and is to be congratulated on the establishment of a Bureau of Sanitary Engineering, a branch of the service which, if carried far enough, can be of inestimable value to

the medical health officers of the Province. Why should not all towns also have a safe milk supply? I should like to make a plea to all medical health officers for the pasteurization of all market milk, especially in our incorporated towns as a beginning.

It is generally conceded that milk and milk products are the most important factors in the food supply of the family. It should be a part of our health program to encourage the increased use of milk, and to educate and arouse public interest in the necessity for the careful control of such an important commodity. It is here that pasteurization is manifest, because it safeguards a food that has such an important bearing on health.

The milk-borne diseases include typhoid and paratyphoid fevers, bovine tuberculosis (in children), septic sore throat, and undulant fever. In 1927 Montreal had 5,000 cases of typhoid fever resulting in 500 deaths, and the epidemic was traced to untreated milk. As a result of one contaminated raw milk supply, Chicago had 10,000 cases of septic sore throat. In Toronto a test of 200 samples of raw milk revealed tubercle bacilli in 4 per cent. Pasteurization has been rigidly enforced since 1915 in that city. As a result, not a single case of bovine tuberculosis has been found in this generation of Toronto children, but children are continually being admitted to Toronto hospitals after having contracted bovine tuberculosis in municipalities where pasteurization is not enforced.

A splendid resolution, passed by the Canadian Council of Child Welfare, is as follows:

"Whereas it has been established that the pasteurization of milk reduces the diarrhoeal diseases of infants, is most effective in controlling epidemics of typhoid fever, scarlet fever, septic sore throat, and other communicable diseases of human origin, is an effective guard against the dissemination of bovine tuberculosis, and is, in addition, the simplest, cheapest, least objectionable and most trustworthy method of rendering milk safe that is known at the present time, therefore be it resolved that the Executive of the Canadian Council of Child Welfare strongly endorses all efforts of health or welfare organizations directed towards the pasteurization of the community milk supply."

If we could lend our efforts to something definite and would urge every incorporated town to pass a by-law requiring pasteurization, with laboratory equipment sufficient to ensure that this was done efficiently, we would be taking a big step towards a fulfilment of a most important public health measure. And we should always bear in mind the close relationship between individual health and community health. Each favours the other. The conduct of the community affects the individual, and the conduct of the individual affects the group. Even when all has been done publicly that can be done, personal behaviour may be such as to interfere with the individual's receiving the benefits of the group health work himself, and may even interefere with others receiving them. This is true in regard to pasteurization as well as in any other important health measure.

As times marches on, we, as health officers, must bear in mind two matters of fundamental importance: investigation and education. Without them there can be no progress; with their aid, advancement in public health work can be made rapidly.

Progress in Housing and Health

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THE interest in better housing continues unabated throughout the length and breadth of the country. The national conscience is awakened to an extent that bids fair to produce definite results. This may be ascribed to many conditions: the shortage of houses due to the Great War and successive depressions, the increase in population, the demand of the people for better housing accommodation, and the educational campaign carried on by all those bodies and persons interested in public health.

With regard to financing new building it is accepted everywhere that private corporations cannot economically build sanitary, low-rental houses for the low-salaried workers and, needless to say, these groups cannot build houses for themselves. The conclusion is inescapable. The state in some way must subsidize such building operations.

England has taken the lead in this respect and local authorities and private builders using Government subsidies, have provided 3,484,132 new dwellings up to September 30th, 1937. Including slum clearance and alleviation of overcrowding projects, the National Treasury has contributed $900,000,000 in subsidies. About 13,500,000 people, approximately one-third of the population, have been re-housed.

In the Scandinavian countries the co-operatives are helping to finance the construction of dwelling houses and in Stockholm more than one-tenth of the population lives in co-operative dwellings held in collective ownership.

From available information, it would seem that 70 per cent. of all new dwellings in Europe, exclusive of Russia and Far-Eastern European countries, have been constructed with state aid.

In the United States where President Roosevelt has stated one-third of the nation is ill-nourished, ill-clad and ill-housed, a bill has recently (August 1937) passed the Senate providing for an expenditure of $700,000,000 to assist local authorities in providing low-cost housing.

In Canada the Housing Act of 1935 has been of definite assistance in helping to solve one of the major causes of the housing problem. Up to August 4th last year, loans aggregating over $10,000,000, had been made providing housing accommodation for over 2,000 families. A noteworthy feature of this Act is that no money can be advanced unless the houses are built according to a set of minimum standards of construction which deal with the basic requirements regarding light, ventilation and space. There is another excellent regulation in

this Act which requires the lending companies to make at least four inspections of the building during construction in order to see that the required minimum standards are complied with.

The Federal Government must also be commended for having appointed last December a Committee to prepare a Model Building Code for Canada. In the set-up of this organization there is a special committee on health and sanitation on which are representatives of the Canadian Medical Association and the Canadian Public Health Association.

The Federal Government has not yet passed any legislation which would provide money or subsidies for either slum-clearance schemes or low-cost housing. The City of Toronto, while prepared to vote over $6,000,000 for a housing program, will not actually spend the money alone, as it considers housing a national responsibility.

The National Housing and Planning Association was organized in March, 1937, to assume leadership of all unco-ordinated groups, to ascertain the nature and extent and situation of the housing problem, to carry on a comprehensive educational campaign which would indicate the need for decent housing for every citizen, and proper planning for every community.

A recent valuable contribution to the extensive literature on the subject of housing is an address delivered by Dr. W. C. Clark (1), Deputy Minister of Finance. Dr. Clark discusses at length and in great detail the economics of housing, pointing out the housing shortage and particularly stressing the need of "bringing the business of providing housing for all the people up to a level of efficiency in quantity and quality, comparable with the level already obtained by the business of providing most of the other necessities, comforts and luxuries of life". Dr. Clark takes the view that in order to meet the housing needs of the low and middle income groups, the construction industry should be so reorganized that it can fabricate houses by the wholesale and on a national basis rather than the present retail method carried on by many small jobbers and middlemen. In other words, the building industry must be organized as is the motor industry so that it can provide sanitary houses at a price as reasonable as is now obtainable in the case of the average automobile.

Another interesting address on housing was delivered by Mr. Aimé Cousineau (2), well-known sanitary engineer of the Montreal Department of Health. Mr. Cousineau spent three months of the summer of 1937 in England and France where he was given every facility by the Ministries of Health to study recent projects and developments. Perhaps the most important message he brought back to Canada is that the present tendency, both in England and on the Continent, is to develop housing schemes on the horizontal rather than on the vertical plan. Practically the only exception to this rule is the circumstance where it is impossible to secure building sites at a comparatively low cost and where the workers have to be housed near their work. He also stated the general feeling in England was toward development on the principle of a house for every family with enough land attached for a small garden.

NOVA SCOTIA

In reviewing progress in Canada within the past few years, one notes that in the Province of Nova Scotia the Government advances to limited dividend corporations 75 per cent. of the amount required for building at 3½ per cent. interest rates, it remits all incorporation fees and provincial taxes, it provides legal and architects' services when required and grants powers of expropriation. The City of Halifax plays its generous part by granting an exemption from all civic taxes for a period of twenty years. In 1935 the Government made available the sum of $200,000 for low-cost housing and the following year the Halifax Housing Corporation was formed and formulated a program which called for the construction of fifty-two four-roomed sanitary houses to rent at about $15.00 per month.

NEW BRUNSWICK

The Province of New Brunswick passed a modern Town Planning Act in 1936 which confers planning powers on any local authority. Since that year, the cities of Fredericton and Saint John have established Town Planning Commissions. The need for such is very evident from the findings of the Saint John Commission which in a preliminary survey found that many two-family flat dwellings were overcrowded to the extent that many were being occupied by four and six families.

QUEBEC

Montreal

Within the past few years a great deal of attention has been given to the housing problem in the City of Montreal, largely as a result of the worthy efforts of the City Improvement League. The following studies have been made:

1. A report on Housing and Slum Clearance by the Board of Trade and City Improvement League 1935.
2. Housing for the low-wage earner by the Montreal Council of Social Agencies 1936.
3. Housing conditions in Montreal by the Housing Committee of the Department of Planning and Research of the Montreal Metropolitan Commission 1937-38. The last-named is a very comprehensive study of 4,216 dwellings in sixty city blocks wherein is found the greater part of the older housing. Contrary to expectations, very little overcrowding is noted. The principal housing evils disclosed are:
   (a) Absence of bathroom accommodation: only 32 per cent. have a bathtub.
   (b) Absence of hot water plumbing: only 11 per cent. have hot water plumbing.
   (c) Water closet installations in kitchen in 34 per cent. of dwellings.
   (d) Vermin infestation in 55 per cent. of the dwellings.
   (e) Permanent dampness in 9.8 per cent. of dwellings.
   (f) Indirect lighting in 9 per cent. of total number of rooms.

It is interesting to note the reasons given by 2,195 people for their last removals, indicating an appreciation on their part of some of the housing evils. Thirty-four per cent. moved because of the physical condition of the dwelling, 25 per cent. on account of bad hygienic conditions, and 9 per cent. because of the unsatisfactory environment. An estimate from the Department of Health shows that notwithstanding the closing of 500 unhealthy houses there remain 1,000 dwellings unfit for human habitation, and several thousand others badly in need of repairs required to make them meet the minimum standards of health.

ONTARIO

Toronto

Following an excellent address in March 1934 by the Honourable Dr. H. A. Bruce, on the occasion of the City Centennial celebration, an impetus was given to the housing reform movement which soon culminated in the appointment by the Board of Control, of a committee to report on conditions found in Toronto. In the survey made, which embraced 1,332 dwellings, it was found that 175 households lived in one or two rooms, 75 per cent. were unfit for human habitation, 59 per cent. had no bath, 58 per cent. were damp, and 202 had outside privies.

The City of Toronto in 1936 passed a by-law to establish a standard of housing which marked a distinct advance in housing legislation. This by-law contains two very important provisions—first, that no lobby, hallway, closet, bathroom, or any room having a floor space of less than fifty square feet shall be used for sleeping purposes. The second provision is, in effect, that when an owner is financially unable to remedy defects and make his dwelling fit for habitation, the corporation, with certain reservations, will do it for him.

An advisory committee on housing made a study of the situation in Toronto in May, 1936. This committee reported that the principal housing evils were found in connection with rear and alley dwellings, 900 of which were unfit for human habitation. It was stated in the report that while housing reform was both necessary and desirable "Toronto alone cannot undertake what it feels to be a national responsibility."

It is noteworthy that at a meeting of Ontario citizens from different centres held in Toronto last May, it was resolved to form a Provincial Housing and Town Planning Association.

Hamilton

In November, 1937, the City of Hamilton passed a very important housing by-law which is referred to by the Medical Officer of Health as the first attempt at a model housing law for Ontario. A reference can be made only to two highly commendable sections. One section dealing with the so-called "alcove room" provides that in every alcove or other space which opens upon or is attached to a habitable room and has a floor area exceeding thirty square feet or a depth exceeding three feet six inches, there shall be provided a window opening directly on a street, outer court or yard as for a habitable room.

The other section concerning nuisances specifically says that no person shall cause or permit any unnecessary noise or vibration between the hours of 10 p.m. and 7.00 a.m., and also states that no person being the owner or occupier of any building or other premises shall allow to exist in, upon or about the same any vermin.

Ottawa

In November, 1935, under the auspices of the National Construction Company of Canada, a report was made upon the housing of recipients of relief in the city of Ottawa, having a population of 137,991.

The survey covered 3,529 self-contained dwelling units comprising 5,625 housekeeping family units housing nearly one-fifth of the city's total population. The following housing evils were encountered: 1,527 sleeping rooms overcrowded, 3,209 families without a separate bath, 3,087 families without a separate wash basin, 1,949 families without a separate water closet, 814 families without yard space, and 868 rooms used for sleeping and cooking facilities.

The report further shows that 576 houses are unfit for human habitation, 1,369 need rehabilitation and 1,189 new dwellings are required to relieve the overcrowding.

MANITOBA

Winnipeg

The Health Department of the City of Winnipeg for more than thirty years has been actively engaged in promoting better housing conditions. Three housing surveys have been made since 1918 and every year a special survey is made to determine the relationship between available dwellings and marriages. The annual reports for the years 1935 and 1936 show that while there were 5,313 marriages the available housing accommodation for these was 180 dwellings. It is natural that the Medical Officer of Health should remark how difficult it is to deal with the problem of overcrowding in the face of such an acute shortage of dwelling houses.

SASKATCHEWAN

Regina

At the present time the Medical Officer of Health for Regina is conducting an extensive survey of housing conditions in the capital city of the province.

ALBERTA

Edmonton

A personal communication from the Medical Officer of Health states the most urgent housing problem in Edmonton is the shortage of houses and consequent overcrowding, the latter existing to such an extent that many citizens are turning their homes into rooming houses in an attempt to cope with the situation.

BRITISH COLUMBIA

Vancouver

In a report made by P. R. V. Stratton on housing in Vancouver and published in "Social Welfare", June, 1937, it is said that in certain districts in Vancouver "numbers of houses have been converted into one- and two-room tenements without adequate cooking or washing facilities and that conditions in basement dwellings are especially bad."

HYGIENE OF HOUSING, AMERICAN PUBLIC HEALTH ASSOCIATION

One of the most important contributions made in recent years on the housing problem is the preliminary report of the American Public Health Association published in the March number of the Association's *Journal*. This report lays down the basic health principles, the specific requirements of each, the suggested methods of attainment needed in order to provide the fundamental minimum required for the promotion of physical and mental health. The program outlined is designed to apply in low and high cost housing on the farm, as well as in the city tenement. In this latter respect its aims are similar to those of the Canadian National Housing Committee.

In summing up these remarks it can be said there has been definite progress in educating the people with regard to the existence of housing evils, their dangers and the need for their removal.

Progress has also been made in the preparation, passing and enforcement of legislation designed to achieve better housing.

But it must be admitted—having regard to the economic side of the problem —there has not been much progress made in providing what is sorely and urgently needed, a sufficiency of low-rental houses for the low-salaried workers.

LACK OF PROGRESS

There has been a lack of progress with regard to two fundamental requirements in a better housing program:

1. Provision of open spaces, playgrounds, and amenities for the outside life of the family.
2. Construction of one- and two-family houses for families with small children.

Hitherto the attention of those concerned with housing was concentrated principally upon the dwelling itself and the life within and too little consideration given to the outside life of the family. It must be remembered the dwelling does not provide for the whole life of the family. A great deal of time is spent outside the walls of the house. It is just as important to provide space for outside life, as space for sleeping, dining and living rooms within the building.

OUTSIDE SPACES

It is necessary to provide yards, courts, playgrounds, parks, wading pools, sailing pools, bathing beaches, and space for public baseball fields, tennis courts, and golf courses, where children can obtain opportunities for self-expression in some form of activity and where all the family can participate in group activities. This is largely a question of providing a good mental hygiene environment which will be of inestimable value in securing and maintaining good physical, mental and social health. In effect it means the provision of parks and playgrounds for the pre-school and school child and for the grown-ups.

These play spaces should be permanent, year round, readily accessible, properly equipped and adequately supervised with trained year-round leaders. They are just as essential as the recognized public health services including water supply, drainage, safe food and welfare facilities.

It is now taken for granted in every modern community that space for play and recreation must be provided for the outside life of the family. The old idea that play is unnecessary and a waste of time has long since given way to the present-day knowledge that it is vitally needed for the health and happiness of child and adult alike.

Plenty of play in the open air develops the child physically, mentally and socially. The value of play in the development of physical health has long been known. An appreciation of its importance in the promotion and maintenance of mental health is of comparatively recent date. Proper play develops the child mentally, brings out his personality, helps to form his character, controls and trains his emotions which are the great generative powers behind behaviour. It promotes social contact which makes it easy for the child to adapt himself to any environment and gives him confidence in going out into the wide world of work. In this strenuous age of machines, speed and tension, wholesome play strengthens the body and nervous system against the depressing influence of mental strain and stresses. Supervised play will develop creative habits in children and thus tend to prevent emotional upsets, behaviour problems and delinquency. It is of the greatest value in the integration of muscle, mind and emotion, gives great pleasure when indulged in, and to the child it is life itself. If wholesome recreation is not at hand, undesirable outlets for the play-urge will be sought and found and these may take the form of excessive daydreaming, shyness, sensitiveness, suspicions, withdrawals from society. This failure in social adaptation may contribute to various kinds of serious personality disorders.

Dr. Charles Dana, professor of nervous disorders at Cornell Medical School, speaking on the subject some time ago, said: "When young folks are taught the worth and ways of recreation, they are taking out an insurance policy against nervous disorders and in middle age, when they come to collect, they will find themselves reimbursed a hundred-fold" (3).

Dr. Pearce Bailey, Chief of the Section of Neurology and Psychiatry, Surgeon General's Office, U.S.A., said regarding functional disorders: "Non-medical agencies, such as boys' clubs, boy and girl scouts, settlement agencies, playgrounds promise most in the line of prevention" (3).

Here an appropriate reference may be made to the relationship of delinquency to the provision of adequate playgrounds, while recognizing that improper use of leisure is but one among the chief causes. Dr. C. B. Raitt (4), former Superintendent of Playgrounds in Los Angeles, in a survey of recreation facilities in Rochester, N.Y., says: "By actual test in various cities it has been shown through the establishment and operating of adequate well-equipped and managed playgrounds, that juvenile delinquency within the district served has been decreased twenty to seventy-five per cent." He continues: "A city which does not provide proper and adequate playgrounds and places of recreation for its children and youths, is bound to pay a severe penalty in the loss of life, child delinquency, jobless men, grafters, criminality, and a general lowering of the quality of citizenship."

It has been stated that provision for the outside life of the family is a proper and legitimate concern of public health and medical associations. The Sanitary Authority lays down standards with regard to room space in dwelling houses, in dormitories, in factories, in bunk houses. Should it not also state standards with respect to play space in the home, in the yard, on the roof, in parks and playgrounds, and so on?

What amount of recreational space is necessary for the outside life of the people? Briefly and without going into details which do not come within the scope of this paper, the generally accepted standards are those suggested by Dr. C. B. Raitt in the Rochester survey, and are as follows:

1. Kindergarten playgrounds for children under seven years, with one hundred feet of play-space per child, and a radius of influence of about one-sixth of a mile.
2. Playgrounds for children six to sixteen years of age, with two hundred feet of play-space and a radius of influence of about one-quarter of a mile.
3. Playgrounds or vacation parks for persons over fifteen years of age. The standard allotment of play-space would be one park for every 1½-mile square area, or one for every fifteen thousand inhabitants.
4. Large parks for city-wide use, at least one hundred and fifty acres for every forty-five thousand persons.

While the provision of community service is not usually considered an integral part of housing programs, yet it is so closely associated with the housing program and is so necessary that it deserves mention.

An essential requirement in the development of adequate mental health and social adjustment is the establishment, in any town planning or housing project, of facilities for participation in group activities. This implies the provision of community halls with kitchen service, recreational and educational centres, gymnasia, skating-rinks, space for handicraft activities, and welfare stations.

That there is a serious shortage in play and leisure space in Canada and the United States is seen from statistics compiled on the subject. Rogers (5)

says: "Some twelve million urban children and probably more than fifteen million rural children in the United States still do not have opportunities to avail themselves of a playground program." In the metropolitan city of Montreal, the available play space probably does not come within 20 per cent. of the requirements.

The reason for the lack of play space in urban and rural districts is usually the ignorance and indifference of the public with regard to the need for such. It is encouraging to note that after an educational campaign showing the value of play in the physical, mental and moral upbringing of children, many American cities were quite prepared to tax themselves in order to provide the required facilities.

Cities, smaller towns, and villages would be well advised to set aside, a considerable time in advance, the space areas that will be required in the future. This is necessary in order to secure accessible recreational areas before the inevitable increase in land prices makes this difficult, if not impossible. Arrangements should be made that any such areas should remain as a permanent part of the neighbourhood setting.

CONSTRUCTION OF ONE-FAMILY HOUSES FOR FAMILIES WITH SMALL CHILDREN

It is practically true to say that medical opinion everywhere almost wholly favours the provision of one-family houses rather than multiple dwellings for the housing of the people.

Consequently, it is the responsibility of physicians, whenever the occasion presents, to direct the attention of the public to the desirability of living, where possible, in one-family dwellings.

Briefly, and without going into well-known details, some of the advantages are as follows:

(a) More sunlight.
(b) More fresh air and greater opportunities for taking exercise.
(c) Cooler in summer.
(d) Less heart strain.
(e) A lower incidence of communicable disease.
(f) Provision for a fuller family life.

In emphasizing the superiority of single family houses, it is fully appreciated that good housing conditions are not at all incompatible with life in multiple dwellings. It is also realized that it may be economically impossible, in the big industrial cities, to construct low-rent single family houses for the low-income groups. Admittedly, it is impossible to lay down any hard and fast rule as to whether one-family houses or multiple houses should be built. Each local authority must deal with its own problems.

In Montreal, it is sometimes said that for climatic and other reasons, the cheapest and most practical type of housing is the three-storey block in short

rows, comprising about twenty families. It has been remarked that the Canadian workman does not want and cannot use a garden. This statement is open to question. In a study of "Housing for the Family" (6), conducted in 1936 by the Women's City Club of New York, it is mentioned that when 782 tenement families were asked if they would make use of a garden, 62 per cent. replied in the affirmative.

It is interesting also, in this connection, to remark that in the last housing census of the Netherlands (1919), which provided data on the types of dwelling, it is stated that "except for some ten towns, approximately 95 per cent. of the existing dwellings were single-family houses" (7).

In England too, the great majority of houses recently built consist of two-storey single family houses built in pairs or rows of four, six and eight (2). Both in England and on the continent, the most favoured housing project is on the principle of a house and a garden for every family. "Every family a home and every child a chance."

In considering these capital problems, our duty is clear. We should take advantage of every opportunity to bring to the attention of the public the urgent need for play and leisure space, the desirability of one-family dwellings. We should put the full force of our weight as physicians and sanitarians, as medical and public health associations, solidly behind every effort that is being made or that may be contemplated, by official and non-official agencies, to provide these facilities which are so necessary for a complete and well-rounded family life.

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Cancer in Ontario*

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IN this discussion of cancer in Ontario, constant reference will be made to mortality statistics. It is realized that these figures are subject to error introduced by inaccuracies in diagnosis and incorrectness in certification. It is recognized, too, that cancer is a disease to which wide statistical preference is given, and that many regard this preference in selecting the cause of death for tabulation as giving undue priority to cancer. The problem would be greatly simplified if the physician in certifying would omit mention of cancer if it is not the cause of death or an important contributory morbid condition. Recent studies (1), however, indicate that the error in official total cancer statistics is not great, probably not in excess of 5 per cent., although errors in site distribution may be somewhat larger.

The Present Extent of the Cancer Problem in Ontario

Cancer ranks second among the chief causes of death in Ontario, as shown in table I.

TABLE I

EIGHT CHIEF CAUSES OF DEATH—ALL AGES
ONTARIO, 1936

CAUSE OF DEATH*	Number of Deaths	Specific Death Rate†	Per cent. of Total Deaths
1. Diseases of the Heart (90-95)	7,053	191.1	18.8
2. Cancer (all forms) (45-53)	4,441	120.4	11.8
3. Diseases of the Arteries (96-99)	4,038	109.4	10.7
4. Accidents and violence (not suicide or homicide) (176-195)	2,847	77.2	7.6
5. Pneumonia and bronchitis (106-109)	2,613	70.8	7.0
6. Nephritis (130-132)	1,892	51.3	5.0
7. Diseases peculiar to early infancy (158-161)	1,637	44.4	4.4
8. Tuberculosis (all forms) (23-32)	1,327	36.0	3.5
Total (1-8)	25,848	7.01††	68.8
All other causes	11,723	3.17††	31.2
GRAND TOTAL	37,571	10.18††	100.0

*Numbers in brackets after each cause are the International List rubrics included.
†Rate per 100,000 population.
††Rate per 1,000 population (estimated for 1936 at 3,690,000).

During 1936, 4,441 deaths were attributed to cancer in Ontario and one death in every nine was a cancer death. The crude death rate was 120.4 per 100,000 population—the highest yet recorded in Ontario. In addition to these

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facts, questions of practical interest concern the distribution of the cancer deaths by age and the relative importance of cancer as a cause of death at ages. Table II indicates the importance of cancer at selected ages.

TABLE II

CANCER AS A CAUSE OF DEATH BY AGE
ONTARIO, 1936

Age Group	Cancer Deaths	Per cent. of All Deaths	Rank as a Cause of Deaths	Specific* Death Rate	Per cent. of Cancer Deaths
0-19.....	37	0.7	Nineteenth	2.9	0.8
20-49.....	618	10.7	Fourth	38.6	13.9
50-59.....	848	19.4	Second	250.6	19.1
60-69.....	1,186	18.3	Second	531.2	26.7
70 and over .	1,752	11.4	Third	1,152.9	39.4
ALL AGES...	4,441	11.8†	Second	120.4	100.0

*Per 100,000 population.
†Total deaths in 1936 were 37,571.

Cancer does not become an important factor in mortality until after the age of twenty years. At ages 20-49 years cancer is exceeded in importance only by deaths from "external causes", tuberculosis and diseases of the heart. The bulk of cancer deaths occurs at ages 50 and over (85 per cent.). At ages 50-69 years almost one death in every five is a death from cancer, only heart disease exceeding it. The specific death rates increase markedly with increasing age. At ages 50-59 the mortality rate for cancer is only half what it is at ages 60-69 years and the rate in the latter period is just half the rate for ages 70 and over. It is a pertinent fact, however, that 33.8 per cent. of the recorded cancer deaths in Ontario during 1936 were among persons under the age of 60 years and 14.7 per cent. among those under 50 years of age.

Data on the distribution of cancer deaths by sex and age are presented in table III.

TABLE III

CANCER MORTALITY BY AGE AND SEX*
ONTARIO, 1936

AGE	MALE			FEMALE		
	No. of Deaths	Per cent. of Total	*Rate*	No. of Deaths	Per cent. of Total	*Rate*
0-19.....	23	1.1	3.3	14	0.6	2.1
20-29.....	13	0.6	4.3	23	1.0	7.9
30-39.....	50	2.4	18.3	97	4.1	36.9
40-49.....	138	6.7	56.8	297	12.4	132.5
50-59.....	364	17.8	209.2	484	20.2	294.4
60-69.....	564	27.5	504.6	622	26.0	557.9
70-79.....	633	30.9	1069.0	606	25.3	997.6
80 and over.....	265	12.0	1804.4	248	10.4	1432.0
ALL AGES.....	2050	100.0	109.1	2391	100.0	132.2

*Rates per 100,000 population.

At ages 20-49 years the mortality among females is more than 50 per cent. greater than that among males. This excess persists up to ages 60-69 years after which the male cancer death rate exceeds that in female.

Variation in Organ Incidence

The distribution of cancer deaths by site or organ affected and by sex is shown in table IV.

TABLE IV

CANCER DEATHS BY SEX AND SITE

ONTARIO, 1936

SITE	MALES		FEMALES		BOTH SEXES	
	Deaths	Per cent. of Total	Deaths	Per cent. of Total	Deaths	Per cent. of Total
Stomach and duodenum	509	24.8	331	13.8	840	18.9
Other digestive tract	672	32.8	738	30.9	1410	31.7
Genital organs	253	12.3	471	19.7	724	16.3
Breast	8	0.4	517	21.6	525	11.8
Buccal cavity	109	5.3	22	0.9	131	2.9
Urinary organs	155	7.6	72	3.0	227	5.1
Respiratory organs	107	5.2	63	2.6	170	3.8
Skin	66	3.2	33	1.4	99	2.2
Other or unspecified sites	171	8.3	144	6.0	315	7.1
ALL SITES	2050	100.0	2391	100.0	4441	100.0

More than one-half of all cancer deaths in Ontario are those attributed to cancer of the digestive tract and peritoneum (including oesophagus, stomach, and duodenum, rectum, liver and pancreas, etc.). The influence of sex on site predilection in cancer deserves emphasis. In Ontario, breast cancer ranks first in numerical importance among women while in males cancer of the stomach stands first. The ratios of male mortality to female mortality present the principal variations (table IV).

Cancer cases which are particularly amenable to treatment with reasonable chance of cure, namely, cancer of the female genital organs, breast, buccal cavity and skin, constitute about 28 per cent. of all deaths classed to cancer. It is especially noteworthy that this group contributed 43.6 per cent. of female cancer deaths in 1936. Upon these cases our interest and attention must be focused, because it is for these sites particularly that it has been demonstrated that available orthodox methods of treatment are meeting with dramatic success in early cases.

During 1936, 847 deaths were attributed to "accessible" cancers (breast, skin, buccal cavity and female genital organs) at ages under 70 years. This represents 70 per cent. of deaths classed to accessible cancers and 19 per cent. of all cancer deaths. The corresponding figures at ages under 60 years were 46 per cent. and 12.5 per cent. respectively.

The incidence of cancer in any organ appears to be influenced by conditioning factors lying outside the site (2) (3). Thus although cancer of the uterus and breast contributed 37 per cent. of the cancer deaths among women in Ontario during 1936 the cancer death rate in females was only 21 per cent. greater than in males. This seems to support the contention that there are compensatory factors in the incidence of cancer of other sites among males, especially stomach, for which the death rate is 50 per cent. higher than in females.

Occupation and Social Status

It has been amply demonstrated by English workers (4) (5) (6) that there are striking variations in cancer mortality by occupation. Cramer (2) has pointed out that the so-called carcinogenic substances are not *generally* carcinogenic but are specifically related in their effects to certain tissues and organs, and that some produce their effect chiefly locally while others produce it at a distance. It may be necessary then to distinguish between organs and sites exposed (not synonymous with "accessible") to injuries acting from without such as skin, buccal cavity, alimentary canal, cervix and lungs on the one hand, and other sites on the other. Stevenson (4) using English data found that for exposed sites (skin, larynx, buccal cavity, oesophagus and stomach) there was a steady increase in cancer mortality among males as the social scale descended. Thus the standardized mortality for cancer of the upper alimentary canal was 33.0 for class 1 and 79.3 for class 5. Other sites showed no such variation. This suggests that some factor or factors varying with social status, and therefore with the habits and conditions of life, constitute for the exposed sites "remote" causes of cancer comparable to the external carcinogenic agents in occupational cancer. The solution of this problem would permit the effecting of marked reductions in incidence and mortality since cancer of the exposed sites represents the bulk of all cancers. It is to be hoped that this field may be explored in Canada to determine how generally applicable are the findings of Stevenson.

Cancer—Increasing or Decreasing?

The question as to whether the trend of cancer incidence in man is upward or not cannot be settled with finality (7). Evidence at the moment appears to support the contention that as a whole the disease is not increasing. An increase is being recorded for some sites, an increase which is most pronounced for sites where diagnosis is difficult, it is stationary in others and decreasing in still others (8). In England and Switzerland, for instance, cancer of the uterus is diminishing, while breast cancer seems to be increasing.

In this connection it should be noted that trends in mortality from cancer by site must be regarded as subject to considerable error (1). Improvement in the accuracy of medical statements of causes of death in recent years and a clearer appreciation of the fact that a statement of the primary site of cancer and not merely the metastases responsible for the fatal issue, is desired, may to some undetermined extent invalidate secular comparisons of the data by site.

Our knowledge of the prevalence of cancer prior to the present century was very imperfect. It is still inadequate and still largely confined to mortality data. In the absence of post-mortem examinations, cancer of internal organs has no doubt been frequently overlooked. Increasing accuracy in diagnosis, a changed attitude of the public toward cancer, and a growing realization of the importance of accurate medical certification in recent years have combined to improve the reliability of statements on the death certificate and therefore the completeness and accuracy of recorded deaths from cancer. Furthermore, to-day the population is considerably older in structure than it was 40-50 years ago. All these are factors which have had some bearing on the substantial recorded increase in cancer mortality during the last twenty-five years (table V).

TABLE V

CANCER MORTALITY
ONTARIO, 1909-1936

Year	Total Deaths All Causes	Crude Rate†	Cancer Deaths	Per cent. of Total Deaths	Crude Rate††	Standardized Rate*
1909.....	30,792	13.7	1,597	5.2	64.9	57
1910.....	31,332	13.9	1,587	5.1	63.7	56
1911.....	31,878	12.6	1,602	5.0	63.4	55
1912.....	32,150	12.4	1,778	5.5	69.2	60
1913.....	34,317	12.7	1,806	5.3	69.2	60
1914.....	32,440	11.8	1,872	5.8	70.7	61
1915.....	33,294	12.3	1,982	6.0	73.7	63
1916.....	35,580	13.0	2,012	5.7	73.7	63
1917.....	33,284	12.0	2,196	6.6	79.2	67
1918.....	43,038	15.3	2,103	4.9	73.0	63
1919.....	34,010	11.9	2,182	6.4	76.5	64
1920.....	40,440	14.0	2,464	6.1	85.2	71
1921.....	34,551	11.8	2,585	7.5	88.1	73
1922.....	34,034	11.4	2,609	7.7	87.5	72
1923.....	35,636	11.8	2,724	7.6	89.9	74
1924.....	33,078	10.8	2,946	8.9	96.2	78
1925.....	33,960	10.8	2,951	8.7	95.1	76
1926.....	35,909	11.3	3,116	8.7	99.0	78
1927.....	34,775	10.7	3,177	9.1	99.7	78
1928.....	37,128	11.3	3,441	9.3	106.8	82
1929.....	38,123	11.4	3,402	8.9	104.0	79
1930.....	37,313	11.0	3,635	9.7	109.7	82
1931.....	35,705	10.4	3,726	10.4	108.6	83
1932.....	36,436	10.5	3,825	10.5	110.1	84
1933.....	35,301	10.0	4,044	11.5	114.7	89
1934.....	35,105	9.8	4,034	11.5	113.2	86
1935.....	36,317	10.0	4,214	11.6	117.1	89
1936.....	37,571	10.2	4,441	11.3	120.4	90

†Per 1,000 population.
††Per 100,000 population.
*Population of England and Wales in 1901 as standard (corrected for age only).

During the period 1909-1936, the crude cancer death rate has almost doubled. In 1909 only 5.2 per cent. of all deaths were ascribed to cancer; in 1936 the percentage was 11.8. An important element in the recorded increase in cancer deaths in Ontario and elsewhere is the change which has been taking place in the age distribution of the population during this period. A larger proportion of the population to-day are persons at ages 50 and over. The influence of such a change is made clear by the fact that at ages 70 and over, 1 in 100 die of cancer and at ages under that only 1 in 1,000 approximately, die of cancer each year. The influence of this age-structure factor can be eliminated by standardizing the cancer death rates (table V). Thus whereas the crude cancer death rate in 1936 was 86 per cent. greater than that in 1909, the age-corrected rate was only 58 per cent. greater, one-third of the apparent increase being attributable to the factor of changing age structure of the population ("ageing").

How much of the increase in recorded cancer mortality which remains can be attributed to improvements in the accuracy of diagnosis cannot be determined but that it is a significant factor is suggested by the tremendous increase in the death rate for males in whom cancers of inaccessible sites play such a large part. For instance, in England in 1871-1880 the mortality from cancer among males was only one-half of that among females, reflecting no doubt the inaccurate diag-

nosis of cancer of the stomach and intestines. To-day the rates for the two sexes are approximately the same. The influence of the factor of diagnosis has been estimated by many observers by studying trends in mortality by sex at ages for accessible and non-accessible sites. It was on this basis that Bolduan and Weiner (9), Dublin and Lotka (10), and others concluded that cancer is not increasing. Wolff (11) has recently stated that cancer mortality as a whole is decreasing in Berlin. These findings do not apply in Ontario.

Trend in Mortality by Age, Sex and Site

In England cancer mortality at ages under sixty-five years has ceased to increase (7). This does not seem to be true as yet in Ontario but the tendency is for the apparent increase to be much reduced in recent years. This may be due in part to improvements in therapy causing cure or delay of death to a later age.

An examination of the Ontario death rates by age and sex shows that there has been an increase in each age group over 50 years, while at ages under 50 years, with the exception of ages 30-39, there has been no increase (12). This fact is most encouraging since even if cancer mortality had not increased materially, it would be very disturbing if the disease was now attacking the population at an earlier age. The increase appears to be confined principally to the older age groups.

At ages 50 and over the substantial increases suggest a real increase in cancer mortality, but improvement in accuracy of diagnosis and certification is probably a particularly important factor at these ages. For instance many of the deaths of persons formerly attributed to senility may be now correctly assigned to cancer, as a result of a greater completeness and accuracy in diagnosis and certification. (In 1910, 3,300 deaths were classed to senility, while in 1936 only 396 were so classified.)

Cancer death rates by site and age for Ontario (12) indicate that there has been little or no change in the death rates at ages for buccal and skin cancer. There has, however, been an increase, particularly at ages 70 and over for female genital cancer. In cancer of the female breast, while there has been little recorded change at ages under 50 years, at older ages definite increases have taken place. For cancer of non-visible sites, the trend in mortality is upward in all age groups over 50 years, with substantial increases at ages above 70 years.

Undoubtedly therapy is exerting an influence on mortality but how great this influence is in the gross is not known. The rise in the mean age of cancer patients at death is, however, partially attributable to this since the effect of treatment in most cases is to postpone death to a later age.

In England uterine cancer is twice as frequent in married as in single women of the same age and appears to have declined with the birth rate. On the other hand, cancer of the ovary and breast have both increased, the former being 90 per cent. and the latter 45 per cent. more frequent in single than in married women of the same ages (7).

The figures for Ontario are presented in table VI.

TABLE VI

CANCER MORTALITY FOR CERTAIN SITES IN FEMALES BY AGE*†
ONTARIO

AGE	BREAST		UTERUS		OTHER GENITAL ORGANS	
	Married	Single	Married	Single	Married	Single
25-44.....	10.0	11.3	13.1	2.4	0.3	0.3
45-64.....	64.5	86.0	44.6	28.4	13.8	34.4
65 and over....	91.6	188.8	77.0	72.8	14.7	54.6

*Based on deaths for 1930-32 for breast and 1931-3 for uterus and other female genital organs.

†Rate per 100,000 population at ages, 1931 census.

The specific mortality rate from cancer of the breast is more than twice as great in single as in married women at ages 65 and over almost 40 per cent. greater at ages 45-64. For cancer of other female genital organs, there is also a marked excess in single women, the rate being more than twice that in married women at ages 45-64 and almost 4 times as great at ages 65 and over. For uterine cancer on the other hand the situation is reversed, the specific death rate in the married group being 5 times as great as in single women at ages 25-44, 75 per cent. higher at ages 46-64 and 10 per cent. higher at ages 65 and over.

Cancer Morbidity

There is a definite need for reliable cancer morbidity statistics. In certain of the cancers affecting man, particularly skin, in which the chance of cure is very high, mortality statistics are inadequate as an index of incidence and while the proportion of "cures" is not high for other sites, yet in making an estimate of the number of cancer cases in existence at any one time, based on recorded deaths, the influence of "cures" should be kept in mind.

In attempting to estimate the extent of the cancer problem some idea of the probable number of cases needing treatment is fundamental. Estimates in the literature vary from 1.5 cases per recorded death to over 3 cases per death. Leaving "cures" out of consideration, a conservative (minimum) figure for cases needing treatment can be placed at 1.5 cases per death. Thus, for Ontario, 1936, the estimated number of cases needing treatment would be 6,600. This estimate is based solely on recorded deaths and available data on the natural duration of cancer of various sites. On the same basis, about 3,000 of these would be cases of cancer of the "accessible" sites. For 1936 and 1937 roundly 2,000 *new* cancer cases (all sites) were treated by radiotherapy at the seven clinics using Government radium. Of these about 50 per cent. were cancers of the "accessible" sites, *excluding* skin. These few facts are sufficient indication that an estimate of 1.5 cases per death should be revised upward. A figure of 2.0 cases per death would appear to be justified at the moment. A comprehensive survey would provide the answer to this difficult but important question.

Morbidity statistics would also make available data much needed for an exploration and perhaps identification of some of the remote causes of cancer in man. Mortality statistics in Great Britain have already provided some leads in this respect. For instance researches into geographic variations in cancer mortality have indicated wide variations in the incidence of cancer by site, in

different communities (13) (14) (15) (16). Thus areas whose standardized mortality figures are the same may have greatly different site incidence. The suggestion at the moment is that local etiological differences can be postulated. Wide fluctuations also obtain in the different counties and districts of Ontario but the nature and possible causes of this variation have not yet been explored.

Morbidity experience alone can provide the data necessary for a careful appraisal of the essential features of the cancer problem. For this purpose, mortality data are inadequate. Information on delay in seeking treatment, efficacy of treatment procedures, etc., are illustrations in point. As an example of the practical information provided by morbidity data, the reports of the National Radium Commission (17) (18) indicate that in only 25 per cent. of patients is there no sign of local or metastatic spread when the paitent is first seen. The known marked differences in survival rates by stage of disease at the beginning of treatment make it clear that the chances of survival are much more favorable in this relatively small group. The reports of the seven clinics in Ontario for 1937 show that of the new cases of cancer of the cervix treated during the year, only 19 per cent. were in stage I, and 31 per cent. in stage II. Of the breast cases only about one-third were in stage I at the beginning of treatment.

Need for Statistical Studies

Statistical investigations on the mortality, incidence, and treatment of cancer are an important part of the scientific attack on the problem. There is need for a wider application of the method of systematic appraisal of the results of treatment. To this end there is now in use in the seven Ontario cancer clinics a uniform scheme of recording which will make possible the study of the histories of patients over long periods of time after treatment (19). This essential work will provide a stimulus to the fuller investigation of the disease and will help to fill the need which now exists for adequate records and follow-up of a large number of treated cases. Accurate information on the incidence of cancer is sorely needed. This can only be obtained by the undertaking of a comprehensive case survey. There is need also for a more detailed study of all cancer deaths in order to determine among other things to what extent those dying of cancer have received treatment prior to death. An investigation into cancer mortality records from the point of view of social status, to assess the influence of this factor on the incidence of the disease, also holds considerable promise.

SUMMARY

1. Cancer ranks second as a cause of death in Ontario, 11.8 per cent. of all deaths being attributed to this cause in 1936.

2. The cancer death rate rises rapidly with increasing age, the female rate being in excess of that for males up to age 70 years and the male rate the greater thereafter. Sixty per cent. of cancer deaths occur at ages under 70 years and 34 per cent. at ages under 60 years.

3. More than half of all cancer deaths in Ontario are attributed to cancer of the digestive system. Breast cancer, however, ranks first in numerical importance as a cancer site in women, the stomach being first in males.

4. More than one-quarter of all cancer deaths in Ontario are attributed to cancer of accessible sites for which we have at our command methods of treatment whose efficacy is established. In women, over 40 per cent. of cancer deaths are those of accessible sites. More than two-thirds of all deaths classed to accessible cancers occur at ages under 70 years. This group represents about one-fifth of all cancer deaths.

5. No definite statement can be made as to whether cancer is increasing or not but evidence suggests that the disease as a whole is not increasing. The total observed increase is substantial but increasing accuracy of diagnosis and medical certification are factors partially responsible. One-third of the apparent increase in cancer mortality may be attributed to the "ageing" of the population.

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The Laughlen Test for Syphilis*

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THE Laughlen test was first published in the *Canadian Medical Association Journal* in August, 1935. In that paper the preparation of the reagents and the technique were described in detail and a series of approximately 1,000 comparative tests was reported. Since the publication of that paper some changes in technique and in the methods of preparing the reagents have been adopted and several thousand additional comparative tests have been made.

The test is best described as an agglutination rather than a precipitation test and is similar in some respects to the Kline test (1) which has also been described as an agglutination test. While it is performed on slides, readings are readily made without the use of a microscope. It is not, therefore, to be considered a microscopic method.

While nearly all syphilis tests employ an antigen and a reagent or saline dilution of the antigen, this test employs an antigen and two reagents. One is the stock or stable reagent which is sometimes wrongly called an antigen, and the other is the active or test reagent.

The antigen is made in the same way as that used in the Kahn test, but does not require to be titrated against saline. If the ether extraction is incomplete, an oversensitive antigen results. Cholesterol 0.6 mgm. per cc. is required, as in the Kahn antigen. A larger amount will produce an undersensitive reagent. Two other ingredients are added and should be considered a part of the antigen; viz., compound tincture of benzoin and scarlet red (scharlach R.). These are added when preparing the reagent and not to the stock antigen.

The stock reagent is an emulsion prepared by diluting the antigen-cholesterol-balsam-scarlet red mixture with warm 1.25 per cent. sodium chloride solution. It is a stable solution and keeps six weeks or even longer at room temperature, during which time it shows slight tendency to sedimentation. It is unfit for use in the test until it has been activated by the addition of electrolyte.

The active or test reagent is made from the stock reagent by adding the requisite amount (usually 0.15 cc.) of 10 per cent. saline to each cc. Only a week's supply is made at one time. It must stand at room temperature for several hours before it is ready for use. If at the end of this time nearly complete sedimentation has occurred, it will be fully active and ready for use. Complete clearing in a shorter time indicates over-activity. This active reagent is fairly stable and usually keeps seven days, but may keep for only five or six days. As soon as a reagent gives difficult or doubtful readings with negative controls,

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it is unfit for use and should be discarded without regard to its age or dating. It is good practice to prepare a new lot of test reagent a day or two before it is likely to be required and use it at first for checking purposes.

ACTION OF THE REAGENT

The reagent is complex and apart from the solvents and sodium chloride, it contains lipoid particles, cholesterol, balsam Tolu, storax, socotrine aloes and the water-insoluble dye, scarlet red. The active materials are the lipoid particles derived from the beef heart which are capable of uniting with the so-called antibody found in syphilitic blood. The other materials are similar to the lipoid bodies in being nearly insoluble in water, but they are incapable of uniting with antibody. In the stock reagent these materials, including the lipoid particles, are held in suspension and while they have an affinity for each other they probably do not adhere until an excess of electrolyte is added. The active reagent contains the minimum amount of saline that is necessary to do this in several hours. When the lipoid particles combine with antibody, all the suspended particles combine with them to form agglutinates. These suspended particles are far from inert. They increase the size of the agglutinates and the speed with which they form. The dye particles produce red agglutinates with better visibility but they also increase the speed and intensity of the reactions. In the agglutinates, which may reach a large size, the individual particles are indistinguishable from each other. They vary in size and shape, being about the size of small bacilli, and all appear red in colour.

The technique of performing the test is the same as originally described. Clean glass slides for single tests, and a glass plate ruled in one-inch squares for use when several tests are made at one time, are required. The glass plate should fit a box with a dark interior which contains a strong light arranged so as to afford indirect illumination. Some may prefer to use wax rings on glass slides, as recommended by Kline for use with his method. Warming or drying of the exposed slides or plates during tests is to be avoided.

INACTIVATION OF SERA

Since nearly all the precipitation and agglutination tests employ heated (inactivated) sera, the question has frequently arisen as to the necessity of inactivation with this method. It has been found in my laboratories that some blood samples which react as weak positives show stronger reactions after inactivation. For this reason the practice of heating all weakly positive and doubtful sera before rechecking was adopted. By the exercise of care in technique with frequent rechecking, it has been possible to show a high percentage of accurate results without the necessity of inactivating all routine specimens. A few specimens were encountered (less than ten in a series of over 5,000) which were negative before inactivation and positive afterward. A similar experience has been reported by others. The percentage of this type of specimen to the total positive samples is sufficiently large to demand that inactivation be adopted wherever possible as a routine measure. It has been customary to heat the sera for ½ hour at 56°C. for this purpose but heating for ten minutes at this

temperature is sufficient in most cases. It has been stated by Rein (2) that heating for three minutes at 63°C. accomplishes the same result. How heating in this way affects the serum is not quite clear but it destroys some inhibitive substance or substances. Specimens so treated are activated rather than inactivated in respect to their behaviour in agglutination tests.

A series of 1,834 fresh blood samples was tested before and after inactivation. Of this number, 1,777 gave negative results with both fresh serum and heated serum and 45 gave positive results. In the 12 remaining specimens differences were found. These are presented in detail in table I.

TABLE I

COMPARISON OF RESULTS OF LAUGHLEN TEST OF FRESH SERUM AND SERUM ACTIVATED BY HEATING

Sample	*Heated*	*Raw*
1,777 samples	Negative	Negative
45 samples	Positive	Positive
Sample no. 5,298	2	7
Sample no. 103	3	Negative
Sample no. 115	6	Doubtful
Sample no. 327	4	Negative
Sample no. 336	4	Doubtful
Sample no. 816	5	Doubtful
Sample no. 822	4	Doubtful
Sample no. 1,036	9	6
Sample no. 1,529	6	Negative
Sample no. 1,536	4	Negative
Sample no. 1,575	5	Doubtful
Sample no. 1,606	Doubtful	2

The figures in the table refer to the number of minutes elapsing before a definite positive reading could be made. The larger figures indicate the weaker positives and, conversely, the smaller the figures the stronger the positivity. Positivity was increased by inactivation in 10 samples and decreased in 2, and there were 4 samples which became positive after heating.

In making the test using spinal fluid, experience has shown that unless the globulins in the spinal fluid be concentrated the test is not reliable as a routine procedure. With this test, as with all other precipitation methods, spinal fluids, excepting the strongly positive ones, fail to react because the reacting substance they contain is too dilute. The method of Kahn for concentrating the globulins by the use of ammonium sulphate enables the test to be used for spinal fluids. It is important in the Laughlen test that the ammonium sulphate be removed as completely as possible.

DISCUSSION

The value of any method of testing blood for the presence of syphilis is based on three considerations: utility or adaptability for a specific purpose; specificity or accuracy, and sensitivity. The Laughlen test, due to its simplicity, speed, and the stability of its reagents, is adapted to emergencies. The testing of donors before transfusions is an emergency of daily occurrence in every general hospital. The use of an illuminating box with a glass top enables the test to be used as a routine measure with a considerable saving in time. The specificity and sensitivity are determined by checking results against the results

obtained on the same samples by reliable methods. If the report of the United States Public Health Service (3) is taken as a guide, we have many reliable tests with which to make comparisons. The Laughlen test has been compared in a number of laboratories with the Wassermann, Kahn and other methods and a few published reports have appeared. Robinson and Stroud (4) in April, 1937, reported a series of comparative tests in which they obtained substantially the same percentages of agreement between the Laughlen and control tests (about 93 per cent. for treated cases) as reported by St. Michael's Hospital, Toronto, in 1935. Approximately the same percentages of agreement in treated cases was reported by Price of the Polyclinic Hospital, New York. In a recent report (5) Price gives in detail his results on 257 blood samples tested by two complement-fixation methods and by the Kahn and Laughlen methods. He states that "both the Kahn and Laughlen tests surpassed the Wassermann in picking up treated cases of syphilis: the Laughlen test equals the Kahn in sensitivity: the Laughlen test is of most importance to us because it forms a rapid means of testing blood donors."

Over 5,000 ward specimens have been examined by the Laughlen method at St. Joseph's Hospital, Toronto, and the results were compared with reports on Wassermann, Hinton and Kahn tests subsequently performed in the Provincial Laboratories. The doubtful reports create a problem in making comparisons and in the following summary they are all considered as being in agreement. This favours the method which produced the most doubtful reports. (The Kahn test has given the largest number of doubtful tests, the Laughlen test the next largest number, and the Wassermann and the Hinton tests the smallest.) On the first 2,000 specimens examined approximately 97 per cent. of agreement was obtained with the Wassermann test and 98 per cent. with the Kahn. Later reports on over 3,000 specimens show 99 per cent. agreement with the Wassermann test and 99.4 per cent. with the Kahn. The Kahn and Wassermann agreed in 99.6 per cent. In the same manner, 692 blood samples from the wards and special treatment clinics of the Toronto East General Hospital were examined and compared. Of these, 13.5 per cent. were positive or gave variable results. There was 96.3 per cent. agreement with the Wassermann test and 97.6 per cent. agreement with the Kahn test. Fourteen Laughlen tests were in disagreement with the Wassermann and Kahn tests. Half of these probable errors occurred in the first 100 specimens. It has been demonstrated elsewhere as well as in the Toronto East General Hospital that technicians should not attempt diagnostic tests until they have carried out a series of at least two or three hundred, using other methods to permit of comparative results. In spite of the apparent simplicity of the Laughlen method, it should not be assumed that it does not require experience and care to the same degree as other tests.

USE OF CITRATED BLOOD PLASMA

In the original publication of this test it was stated that citrated blood plasma could be used instead of blood serum. Caution to avoid dilution was advised. The use of citrated plasma is convenient in cases where it is difficult to obtain blood by venesection, as for example in young infants. Numbers of syphilis

tests on such samples have been performed in the author's laboratory, without encountering any appreciable over-sensitivity, or under-sensitivity, as a result of the citration. Samples affected by dilution have been rejected. Diluted blood plasma is equally unsuitable for the purpose of cross-matching preliminary to transfusion.

TABLE II

COMPARISON OF FINDINGS OF CITRATED PLASMA AND SERUM, USING THE LAUGHLEN TEST

Samples	*Citrated Plasma*	*Serum*
18 patients	Negative	Negative
30 patients	Positive	Positive
M.B.	5*	3
E. 6741	6	Negative
M. 12162	5	7
F.N.	8	Doubtful
A.M.	8	Doubtful
D.W.	5	Negative
J. MacD.	2	4
Wales	7	Doubtful
Hearne	4	6
Costa	3	Doubtful
Carr	5	8
McGowan	Negative	5
7602	5	3
16643	3	5
10267	Negative	7

**Number of minutes elapsing before a positive reading could be made.*

Because of reports from other laboratories (2) to the effect that citrated plasma was unsuitable for use in the Laughlen test, a more critical survey was undertaken. Whole blood and citrated samples were obtained from 63 patients undergoing treatment in the Toronto East General Hospital. Each citrated sample consisted of 3 to 8 drops of blood received into a small test-tube containing a trace of 5 per cent. sodium citrate. (The tube was first filled with 5 per cent. sodium citrate in normal saline and then emptied by inverting, leaving only the citrate solution which adhered to the glass.) Testing of the serum and citrated plasma from each case was done simultaneously, using the same reagents. Of the 63 samples, there was strict agreement in 48, 18 giving negative findings and 30 positive findings. In the samples from 15 patients minor differences were noted, as presented in table II. As in table I, the figures refer to the number of minutes elapsing before a definite positive reading could be made. The larger figures indicate the weaker positives and, conversely, the smaller the figures the stronger the positivity. Thus in the series of 63 patients where dilution with citrate was avoided, there were no disadvantages noted in the use of citrate plasma, the differences being occasioned by haemolysis.

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The Reallocation of Non-resident Births and Deaths*

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IN all larger centres the subject of non-resident births and deaths is important to those whose task it is to compile and furnish statistical information for the use of both official and unofficial health agencies.

In the reallocation of births and deaths to the locality of usual residence, a practice employed in Hamilton for a number of years, we are faced with the difficulty that while we have access to information about the non-resident who is born or who dies within the municipality, we have no such information regarding births and deaths of residents occurring in other centres.

This situation arises, not through inadequate certification or any defect in the registration machinery, but largely because we have not yet adequately defined the term "non-resident". Such a definition must be the basis upon which future practice rests.

What then shall we use as a yardstick? There are two chief alternatives: an arbitrary determination of residence by a time limit, possibly one year, or the acceptance of the usual place of residence as designated on the certificate. Both have apparent limitations. No time limit can be applied to all deaths to determine the place of origin of the fatal illness, which after all is one of the prime reasons from which the problem of non-resident deaths arises; nor can deaths be arbitrarily charged to the "usual place of residence" without some consideration of the duration of that residence and its relation to the duration of the illness that "caused" the death. For practical purposes the definition might well include elements of both alternatives, and the application of the term confined to those deaths occurring away from the place of usual residence *within one year* of the decedent's leaving that place, if the duration of the disease causing death was greater than the length of residence in the place where death occurred.

In cases in which a chronic condition is given as the cause of death, even though the time of non-residence be longer than a year, it might be considered good practice to consider such deaths as resident, inasmuch as it will be probable that the duration of the illness was longer than that of the non-residence.

Deaths from the acute communicable diseases might be charged to the place where the disease was contracted, if such can be definitely ascertained, without regard to the usual place of abode. Such a course would be open to objection from larger centres on the assumption that opportunity would be greater for non-residents of such places to acquire infection. A trial study undertaken by a

**Abstract of a paper presented before the Section of Vital Statistics and Epidemiology at the twenty-sixth annual meeting of the Canadian Public Health Association, Ottawa, June, 1937.*

competent body having the necessary facilities would probably indicate whether this course should be applied.

In deaths from violence, those which are a particular hazard of a certain district might be charged to the place of occurrence, instead of being treated as resident deaths under the ruling of the "usual place of abode". The figures of the city of Hamilton show that such a course would provide much more useful data than does the present practice of allocating the death without exception to the usual place of residence.

In new-born infants and very young children of non-resident mothers, unless the births are also excluded from the local statistics, the deaths should be charged to the place of occurrence; otherwise the infant mortality rates prove misleading.

At various times the United States Census Bureau has attempted to present death rates inclusive and exclusive of non-residents for several localities. In 1914 the definition of a non-resident was "a person who dies in a hospital or other institution and whose previous residence is given on the certificate as other than in the registration area in which the death occurred." This definition was revised in 1915 to read: "whose previous residence is given but who lived less than one year in the registration unit in which the death is compiled." In 1918 a further revision was made: "a person whose usual place of residence is outside the registration district in which he dies." Thus it would appear that differences of opinion, and an inability to resolve these differences, have precluded attempts to arrive at a satisfactory method of allocating non-resident deaths.

In Canada, the Committee of the Section of Vital Statistics and Epidemiology of the Canadian Public Health Association has been studying this question for a number of years with a view to suggesting a satisfactory definition of what constitutes a non-resident birth or death, and the manner in which the necessary data might be collected and disseminated. Much of the responsibility for the success of the initial steps in this field is due to the Dominion Bureau of Statistics. The co-operation and the leadership which it has given in formulating a satisfactory procedure for the reallocation of births and deaths deserve our appreciation and commendation.

One of the major factors influencing death rates in larger centres of population is the extent and location of hospitals and sanatoria within them, to which non-residents, often in significant numbers, are admitted.

Such a situation occurs in Hamilton. The Mountain Sanatorium receives patients from the central-eastern portion of the Province. The recently enlarged accommodation for maternity cases in the General Hospital will also undoubtedly lead to an increase in the number of non-resident mothers delivered in Hamilton. Both factors influence their respective statistical ratios. It has, however, not been our experience that maternal death rates have been unduly influenced by the growing numbers of maternity cases admitted to the city hospitals.

THE EFFECT OF REALLOCATION

During the last five years the birth rates, inclusive of non-residents, have exceeded the rate for residents only by amounts of from 1.7 to 2.5 per thousand

of population. These figures are, of course, uncorrected for births outside the municipality, of which we have no knowledge.

Similarly, the mortality rates corrected for residents only (as far as possible) show differences of 1.25 to 1.58 per thousand of population. These rates have been corrected for residents dying in the adjacent sanatorium, which is not within Hamilton's registration area; in the Ontario Hospital, also outside the municipality; and those dying by violence outside the city but within the limits of Ontario.

A study of these deaths by cause shows that the differences in rates from diseases of the heart during the years 1934, 1935 and 1936 were 55, 41 and 62 per 100,000, respectively. Except for tuberculosis, little effect is noted on the rates for the communicable diseases. Few cases from outside points are hospitalized and very probably only those who become critically ill at home. This is probably contrary to the experience of Toronto, serving a large semi-urban population.

With tuberculosis being treated in the 600-bed Mountain Sanatorium, the facts are somewhat different. Patients are admitted from a large area of the Province and include almost all of Hamilton's cases under institutional care. Transcripts of the death certificate of patients dying in the sanatorium are supplied by courtesy of the Division Registrar of Ancaster, in whose area the sanatorium is situated. Arrangements have been made also permitting the Department to be notified of deaths occurring in the adjacent districts. Notifications are also received from three institutions caring for the aged and infirm, one of which is situated in an adjacent town.

The differences in non-resident and resident death rates from tuberculosis for the years 1934, 1935 and 1936 were 5.4, 7.2 and 9.6, respectively, per 100,000.

In considering the effect on the infant mortality rate, the percentage of non-resident births has remained fairly constant, constituting about 9 per cent. of the births reported in Hamilton. In 1932 the difference in rates was nearly 5 per cent., that inclusive of non-residents only being 57.7. In the following year the rates differed, however, by less than 1 per cent. In 1934 they were identical. In 1935 they differed again by less than 1 per cent., and in 1936 the rate including non-residents was actually less than the resident rate. This undoubtedly indicates that so far as Hamilton's vital statistics are concerned, only those non-resident infants succumbing before hospitalization of the mother has elapsed, appear in our figures. The remainder are lost, except so far as we are able to ascertain them from Dominion statistics when these become available at a much later date.

The solution of the problem of the reallocation of births and deaths is important from the viewpoint of the vital statistician and the local medical officer of health. It is to be hoped that the difficulties which exist at the moment in municipalities may soon be sufficiently surmounted so that reallocation may be conducted by those departments having statistical divisions and that publication of provincial and national natality and mortality statistics on the basis of residence may be made by the Dominion Bureau of Statistics.

Antitoxin Response in Guinea Pigs Deficient in Vitamin C*

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VARIATIONS have been observed in the levels of diphtheria antitoxin developed in response to diphtheria toxoid in guinea pigs given different amounts of ascorbic acid while on a diet deficient in natural vitamin C. These observations are recorded in this communication.

Experimental

In December, 1935, one hundred and fifty guinea pigs were divided in 2 equal groups, A and B, and given a diet of hay, oats and water. This diet is so deficient in vitamin C that guinea pigs restricted to it, during the winter months, die regularly in 4-6 weeks unless supplied with additional vitamin.

The group A pigs were given subcutaneously every fourth to fifth day 3.5 to 4.5 mgs., or 0.9 mgs. per day, of ascorbic acid (B.D.H. tablets) in freshly prepared saline solution. The group B pigs were given 14.4 mgs. to 18.0 mgs., every fourth to fifth day, or 3.6 mgs. per day, of ascorbic acid, *i.e.*, four times the amount given to pigs in group A.

Twenty-three days after subjecting the pigs to these regimes, they were given 0.5 cc. diphtheria toxoid (12 Lf per cc.) subcutaneously. After an interval of three weeks blood was drawn from each pig and titrated for antitoxin content by Fraser's (1) method. Four weeks after the first dose, the pigs were given 0.5 cc. of the same toxoid. After a further interval of four weeks blood was again drawn from each pig and titrated for antitoxin content.

Following the taking of the second blood sample the surviving pigs (group A 39, group B 44) were placed on a full diet of greens, hay and oats. Injections of ascorbic acid were discontinued. After three months on normal diet, they were bled for the third time and the antitoxin content of the sera again determined.

All pigs were weighed at the beginning, during, and at the end of the experiment.

Table I shows the average weights of the two groups of pigs and weight gains. It is evident that those supplied with the larger dose of ascorbic acid made much larger gains in weight than those given the smaller dose. In fact, many of the pigs in group A were in a state of severe inanition as a result of vitamin C deficiency. A few of the animals in group B failed to show satisfactory gains due apparently to an insufficiency of vitamin C in even the larger

*Presented at the fifth annual Christmas meeting of the Laboratory Section, Canadian Public Health Association, Toronto, December, 1936.

dose, as evidenced by swelling and haemorrhage at the costochondral junction or swelling in the joints of occasional pigs dying from group B. Practically all the group A pigs dying presented similar or more marked gross evidence of scurvy. Following the return to normal diet, all animals showed pronounced gains in weight.

TABLE I

AVERAGE WEIGHTS OF GUINEA PIGS BY GROUPS WITH PER CENT. GAIN IN WEIGHT

	Average Weights	
	Group A	Group B
Before special diet started	315 grams	315 grams
At 1st toxoid injection	331 "	390 "
At 1st bleeding	353 "	406 "
At 2nd bleeding	362 "	460 "
Per cent. gain	15	46
At 3rd bleeding	554 grams	612 grams
Per cent. gain since 2nd bleeding	53 "	33 "

In table II are shown the results, grouped, of individual antitoxin titrations of blood samples taken three weeks after the first dose of toxoid, four weeks after the second dose of toxoid, and three months after a return to normal diet, *i.e.* four months after the second toxoid injection. It is evident that in each group there were very considerable individual variations in antitoxin response. It is evident too, however, that pigs in group B, in general, developed antitoxin to higher levels than those in group A. In response to the first dose of toxoid 7 or 11 per cent. of 66 pigs in group A developed antitoxin to a level of 0.001 units or greater per cc., compared with 23 or 35 per cent. of 64 group B pigs developing antitoxin to that titre. After the second dose, 16 of 45 samples of group A, or 36 per cent., compared with 35 of 57 samples, or 61 per cent. of group B, showed 0.1 units or greater. The highest individual titre in group A was 3 units per cc.; the highest in group B was greater than 5 units. Three months after

TABLE II

ANTITOXIN RESPONSE

Antitoxin units	1st Titration				2nd Titration				3rd Titration			
	Group A		Group B		Group A		Group B		Group A		Group B	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
>5							1					
1–5					3	36	15	61				
>0.25									3	14	17	56
0.1–0.8					13		19		4		7	
0.001–0.04	7	11	23	35	10		10		5		3	
<0.002	59	89	42	65	19		22		10		3	
	66		65		45		57		22		30	

return to normal diet, the surviving animals of group A were still at a considerably lower level of antitoxin titre than those of group B. Three of 22, or 14 per cent. of survivors of group A, had more than 0.25 units of antitoxin per cc.; whereas in group B, 17 of 30, or 56 per cent., were above this level. The influence of the secondary stimulus is evident in the marked increase in antitoxin in the pigs in each group following the second dose of toxoid.

The smaller number of animals in group A at the second bleeding is accounted for by the greater number of deaths in the group.

An attempt was made to correlate the pathological signs with the antitoxin response but no significant degree of correlation was found.

DISCUSSION

The wide variation in the response of individual members of each group indicates the necessity for large numbers of animals as a fair basis for comparison or contrast. The preponderance of group A pigs in the lower titres and of group B pigs in the higher titres, however, leaves little doubt that the difference in these two groups is due to some factor other than chance. Owing to the pronounced inanition in the group A animals it is impossible to say that the lower antitoxin response was due solely to a deficiency of vitamin C. Additional experiments in which an equal degree of inanition is produced by deprivation of other constituents of the diet with adequacy of vitamin C are necessary. The present observations permit the conclusion, however, that in inanition due to adequacy of vitamin C the immunity response to diphtheria toxoid is depressed.

SUMMARY

Guinea pigs given vitamin C (ascorbic acid) subcutaneously in a dose sufficient only to maintain life and allow small weight gains, developed lower levels of antitoxin in response to diphtheria toxoid than guinea pigs given a larger dosage of ascorbic acid sufficient to give good gains in weight and maintain pigs in a state more approaching normality.

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EDITORIAL SECTION

RECENT FINDINGS IN THE EPIDEMIOLOGY OF POLIOMYELITIS

ALTHOUGH there is no doubt as to the communicability of poliomyelitis, the paths of entrance into the human body are not definitely known. It is known that the virus is present in the nose and throat secretions of persons acutely ill with the disease or those who may be temporarily harbouring the disease. The virus, however, has been isolated on not more than twenty occasions from the nose and throat secretions of living human beings. From only two persons in contact with the disease has the virus been recovered. The virus has been recovered also from the tonsils and adenoids of one child who gave no history of contact. The many failures to demonstrate the virus in the nasopharynx in man may be due to technical difficulties rather than to absence of virus, particularly as it is known that the secretions of the normal nose and throat may contain substances capable of inactivating the virus. The epidemiology of the disease in man rather than the experimental observations suggest the transmission of the disease through the secretions of the nose and throat.

There are two well-defined views concerning the nature of the infective process in man. According to Draper, "acute poliomyelitis is an acute infectious disease in the course of which paralysis is but an accidental and incidental occurrence." Faber, on the other hand, considers the virus to be a strict neurotrope, for man as well as for the monkey, entering the body probably through the olfactory nerve endings in the nasal mucosa. In a recent publication he records further studies in monkeys to support his views. By intravital staining with trypan blue in monkeys he has visually demonstrated the development of lesions, first in the olfactory bulbs, later in the brain stem, and finally in the spinal cord. Doubt has, however, been cast on the assumption that the virus enters the human body only through the olfactory mucous membrane by the absence of lesions or the presence of very minor changes in the olfactory bulbs of fatal human cases. L. W. Smith recorded the findings in fifty-six human olfactory bulbs, reporting a surprisingly small amount of pathologic change. These findings are in contrast to the changes which have been found in the olfactory bulbs of monkeys following the instillation of virus into the nasal tract. The observations of Smith have been confirmed by other observers. The absence of gross lesions in the olfactory bulbs in fatal human cases does not, however,

exclude the possibility of the entrance of the virus through the olfactory mucous membrane.

Based on this assumption, and on the successful prevention of the disease in monkeys by nasal spraying with certain chemicals, extensive trial of such chemoprophylaxis has been made during the past two years. Schultz and Gebhardt, in extensive experimental trial in monkeys, found that zinc sulphate was the most effective of the chemicals used in the prevention of the infection in monkeys and recommended its trial in man. The extensive trial which was made of this method in Toronto during the outbreak last summer failed to demonstrate any protective value of the spraying. The failure may have been due to the technique followed, namely of spraying, as further work has shown that instillation without the use of an atomiser by the methods of Pentecost and of Shahinian and his associates permits of a more complete covering of the olfactory area. Further, persisting anosmia has been reported, particularly among adults receiving the spray. This finding is most disturbing, and Schultz and Gebhardt have recently issued a warning, advising that the spray be not used in adults and reporting that inflammatory changes have been noted in the olfactory mucous membrane of some of the treated monkeys. Several other observers have reported serious damage to the olfactory mucous membrane in ferrets and white rats following the application of zinc sulphate in the strength used in nasal spraying. The application of chemical agents to the delicate olfactory mucous membrane, therefore, must be regarded as purely experimental and be undertaken with caution.

The most significant contribution made during the past year is the recently reported isolation of the virus from the intestinal tract. More than twenty years ago Kling, Pettersson and Wernstedt, Kling and Levaditi, and Sawyer reported similar success. The total number of such isolations was small, and these early findings were regarded with some doubt. However, the findings of Harmon in 1937, in which the virus was isolated from rectal washings in four of twenty patients, served to draw attention again to this field of investigation. The recently reported isolation of the virus from the intestinal contents by Trask, Vignec and Paul is particularly significant in that the virus was obtained from a mild or abortive case on three occasions during twenty-four days following the onset of the illness. Further, they found that the virus remained viable for ten weeks in one of the specimens stored in the refrigerator. Infection by the intestinal tract has not been considered as likely, because attempts to infect monkeys by the introduction of large quantities of potent virus into the intestinal tract have generally failed unless the tissues of the gut were seriously damaged. Public health authorities, however, have recognized the possibility of the transmission by excreta, requiring the disinfection of stools. The further demonstration of virus in excreta calls for reinvestigation of the whole subject.

REPORT OF THE ASSOCIATION'S WORK DURING 1937

Part II

FIFTH ANNUAL REPORT OF THE COMMITTEE ON THE CERTIFICATION OF SANITARY INSPECTORS*

SUBSTANTIAL progress has been made during the past year in the work of the Committee on the Certification of Sanitary Inspectors. The Committee has as its objective the improvement of the status of the sanitary inspector in Canada by having health authorities recognize the importance of employing only qualified inspectors and to afford to inspectors the opportunity of obtaining an acceptable certificate as evidence of training and experience. It is gratifying that legislation was enacted in British Columbia at the last session of the Legislature, requiring the appointment only of qualified sanitary inspectors. Inspectors must hold the certificate as issued by the Canadian Public Health Association or possess an equivalent qualification. Similar legislation has been in effect in the Province of Manitoba for several years. In Ontario, an amendment to the Public Health Act was passed, which permits the Department of Health to establish qualifications for health officers, sanitary inspectors, and other public health personnel.

The Committee, therefore, have every reason to be pleased with the progress that has been made in regard to its objective of establishing a minimum qualification for the office of sanitary inspector. The Committee fully realize, however, that the objective of employment only of trained inspectors must await a change in rural health organization and that of small urban centres, which will permit of the employment of trained inspectors on a full-time basis. The number of inspectors serving on a part-time basis exceeds by three or four times the number who are at present on a full-time basis. Those employed on a part-time basis are required to undertake many duties that are not related in any way to the work of a sanitary inspector. Only a few part-time inspectors can be expected to be interested in obtaining a qualification as offered by the Committee.

A survey was conducted during the year of the number of sanitary inspectors who are giving their full time to sanitary inspection. The findings of the survey showed that there are 384 sanitary inspectors employed on a full-time basis by the nine provincial departments of health and the cities of 5,000 population and over. Of this number, 132 hold a qualifying certificate in sanitary inspection, 44 hold a veterinary or other degree, and 211 have no qualifying certificate. (Three inspectors have both a degree and a qualifying certificate.)

**Incorporating the amended regulations as approved by the National Committee on the Certification of Sanitary Inspectors.*

As certain recommendations are included in this report, entailing changes in the regulations relating to the certification of sanitary inspectors, it will be helpful to review briefly the present regulations and the experience of the Committee.

PRELIMINARY EDUCATION

The regulations require that candidates shall have completed an approved course of secondary school education. Realizing that many employed sanitary inspectors would have difficulty in meeting this requirement, provision was made in the regulations that inspectors who were in the employ of departments of health and had been or were employed for at least a year would be permitted to register for the examinations without having to meet this requirement. All employed sanitary inspectors have been advised by letter that the closing date for such applications is December 31, 1938. After this date, the requirement regarding secondary school education will be enforced for all applicants. The Committee have given careful consideration to defining the secondary school education and one of the recommendations included in this report relates to this matter.

TRAINING OF CANDIDATES

(i) *Provision of Instruction by Departments of Health*

Apart from the formal course of instruction as provided in the School of Applied Social Hygiene, University of Montreal, no courses are offered in Canada. Through the co-operation of the departments of health of Winnipeg, Vancouver, Hamilton, and Toronto, lectures have been given and field work arranged, both for members of the respective departments and for prospective inspectors. In this connection the Committee desire to draw special attention to the excellent course which has been arranged by the Department of Public Health of the City of Toronto. This consists of a course of 30 lectures and provision is made for a series of field visits. The course in Toronto was attended by more than thirty members. A series of lectures was given on sources and modes of infection, immunity, the common communicable diseases, food control, dairy inspection, sanitation, housing, fumigation, plumbing, control of nuisances, etc. The Committee hope to publish the full details of this course so that consideration may be given to the conduct of similar courses in other cities next year.

(ii) *Publication of a Manual*

In preparing a manual, the Committee desired to guide the candidate in his preparation, supplementing the syllabus and recommended references. The Manual is in the form of a mimeographed outline and now consists of more than 225 pages. It has been prepared largely under the direction of Dr. R. D. Defries, Associate Director, School of Hygiene and Connaught Laboratories,

University of Toronto; Dr. A. E. Berry, Director, Division of Sanitary Engineering, Department of Health of Ontario, Toronto; Dr. F. M. R. Bulmer and Dr. J. G. Cunningham, Division of Industrial Hygiene, Department of Health of Ontario, Toronto; Dr. A. M. Fallis, Ontario Research Foundation, Toronto; Mr. A. S. O'Hara, M.R.San.I., C.S.I.(C.), Provincial Sanitary Inspector, Kenora, Ontario; Dr. L. A. Pequegnat, Deputy Medical Officer of Health, City of Toronto; and Dr. A. R. B. Richmond, Director, Division of Food Control, Department of Public Health, City of Toronto.

(iii) *Field Experience*

For prospective candidates, field experience is absolutely essential. The present regulations require evidence of satisfactory field experience in the form of a certificate signed by the medical officer of health under whose direction the work was conducted. In order to define more clearly the extent of this field work, the Committee have issued a report form. Each candidate is required to record all the visits made, giving the date, the number of hours spent, and the name of the inspector under whose direction the visit was made. The report form affords the candidate the opportunity of recording all of the visits which he has made. In addition, each candidate is required to make four written reports of inspections which he has conducted. These reports include a sanitary survey of a rural dwelling, a dairy-farm inspection, a dairy-plant inspection, and one additional inspection which may relate to plumbing, housing, or the investigation of a nuisance. These reports are to be read and approved by the inspector of the department. The report of the field work, when completed, is to be endorsed by the medical officer of health.

Examinations were conducted on September 23, 24, and 25 in five provincial centres: Vancouver, Edmonton, Regina, Winnipeg, and Toronto. One day and a half was utilized for the preparation of an assigned inspection report and an oral examination, and the remaining day and a half for the writing of three examinations in sanitation, food control, and prevention and control of communicable diseases. Fifteen provincial examiners co-operated in the conduct of the examinations. The written papers were read by members of the Central Committee.

Applications were received from 52 candidates, of whom 46 were accepted and permitted to write the examinations. The Committee desire to express their appreciation of the interest and support of Dr. James Roberts, Medical Officer of Health, Hamilton, who arranged for ten of the members of the sanitary inspection staff to write the examinations. The report of the Examining Board indicated that the majority of the candidates were well prepared for the examination. Of the 46 candidates, 39 passed or were conditioned in one subject. Candidates failing in one subject are permitted to re-write the paper at the next annual examination and must complete the work, including the oral examination, before the certificate is granted. The following were the successful candidates:

British Columbia: William M. Black, Arthur B. Cockle, Joseph Fuller, Alexander A. Gracey, Samuel C. Kinniston, John D. Lee, Norman E. Pengelly (*Communicable Diseases*), John E. W. Proud, and Laurence E. Robertson. Alfred Holmes was granted standing in the field investigation report and the oral examination.

Alberta: William C. Batty and Edgar E. C. Powell.

Saskatchewan: Oliver S. Fyfe and William C. N. Reed.

Manitoba: Louis J. Hunter, Cyril G. Muller, Lorne Slaght, Wilfred Taylor, and Conrad E. van Engel.

Ontario: Albert Clarey, Robert A. Colling, Albert E. Cooke, Thomas P. Cox (*Field Investigation Report*), Harry Dennison, George L. Downes, George H. Edwards, Louis S. Fox, Harry R. Gibbon, George A. Gompf, John M. Homer, T. Lloyd Jones, John L. Kennedy (*Sanitation*), Arthur H. Lomax, Donald McDonald, John P. Mardall, John O'Hanley (*Sanitation*), Ernest J. Picton, Aubrey C. Shain, Arthur L. Smith (*Sanitation*), and Arthur Widdup. Arthur W. Brett was granted standing in the field investigation report and the oral examination.

The 1937 examination papers were as follows:

SANITATION

Time: 3 hours

1. (*a*) What are the essentials of a satisfactory and safe drinking water?

(*b*) A town of 2,000, situated on a river which is turbid and subject to pollution, desires to install a municipal water works, utilizing the river for supply. (i) Outline the constituent parts of such a system. (ii) Describe the method of treatment which might be used to render this water satisfactory and safe.

2. (*a*) What do you understand by the chemical examination of water?

(*b*) Give in detail the method for properly taking a sample of water for bacteriological examination.

(*c*) A laboratory report of a sample of a well water indicates the presence of *B. coli* in 1 cc. Discuss the significance of this report.

3. A rural school of four rooms is to be constructed. Give in detail your recommendations concerning the proper provision for:

(*a*) Water supply.

(*b*) Sanitary toilets.

(*c*) Satisfactory ventilation.

(*d*) Proper lighting, both window and artificial, with due consideration to the location of the blackboards.

4. (*a*) In sequence describe the parts of the sewage drain system from the roof to the trunk sewer.

(*b*) Explain the following terms:

(1) Storm sewer.

(2) Cross-connection.

(3) Activated sludge treatment.

5. Discuss the various factors that should be considered in providing for disposal of refuse in dumps. Outline the care that should be given to such a dump.

FOOD CONTROL AND LEGISLATION

Time: 3 hours

1. (*a*) Enumerate five diseases which may be transmitted to man by milk and indicate the source of the infection in each instance.

(*b*) Describe in detail the various steps in the handling of milk in a dairy conducting pasteurization, from the receiving of the milk to the delivery from the plant. Indicate clearly your duties as an inspector in each part of the process.

2. Discuss meat inspection under the following headings:

(*a*) Reasons for inspection.

(*b*) Conditions calling for condemnation of part or whole of carcass.

(*c*) Federal and municipal responsibilities.

3. Describe the procedure which you would follow in making an inspection of a restaurant seating fifty persons. Outline the form of your report, grouping your findings under suitable headings.

4. (*a*) What legislation deals with the adulteration or misbranding of food products?

(*b*) How is control exercised by the governmental and municipal departments concerned?

5. Write notes on:

(*a*) Washing and sterilization of dairy-farm utensils.

(*b*) The Babcock test for butter-fat in milk.

(*c*) The role of flies in the transmission of disease.

PREVENTION AND CONTROL OF COMMUNICABLE DISEASES AND RELATED SUBJECTS

Time: 3 hours

1. Discuss fully the various factors which you would investigate in case of an outbreak of diarrhoea in some of the guests of a summer hotel.

2. (*a*) What is a typhoid carrier?

(*b*) Indicate how a typhoid carrier can be a menace to a community.

(*c*) As quarantine inspector, what instructions would you give to a family resident on a farm in which a case of typhoid has occurred?

3. (*a*) What is meant by a "communicable disease"?

(*b*) Discuss fully how these diseases may be spread from one individual to another, giving examples.

(*c*) Name seven notifiable communicable diseases, stating also the quarantine and isolation periods in each.

4. Two cases of smallpox are reported in a lumber camp. Discuss fully the measures which should be taken for effective control of (*a*) cases and (*b*) contacts.

5. Write notes on the following:

(*a*) Incubation period.

(*b*) Importance of birth registration.

(*c*) Control of bed bugs in a lodging house.

(*d*) Terminal disinfection.

The Committee desires to express their appreciation to the members of the five Provincial Examining Boards who so kindly co-operated in the holding of the examinations. In each Province the Chairman of the Board was named by the Department of Health and, with the assistance of two or more members,

made the arrangements and conducted the examinations, which extend over a period of three days. The Boards of Examiners were as follows:

British Columbia: Dr. J. W. McIntosh, D.P.H., Medical Officer of Health, Vancouver, chairman; Mr. Alexander McCulloch, C.S.I.(C.), Assistant Plumbing Inspector, Vancouver; and Mr. John Oliver, Assistant City Engineer, Vancouver. Dr. W. G. Saunders, D.P.H., Medical Officer of Health of the North Vancouver Health Unit, assisted Dr. McIntosh as vice-chairman.

Alberta: Dr. R. B. Jenkins, D.P.H., formerly Medical Officer of Health of Edmonton and now Chief of the Division of Epidemiology in the Department of Pensions and National Health, Ottawa, chairman; Mr. George E. Cottle, formerly Provincial Sanitary Inspector, Edmonton; and Mr. Dudley B. Menzies, C.E., Provincial Sanitary Engineer, Edmonton. To Mr. Cottle the Committee is especially indebted for his services as presiding officer.

Saskatchewan: Mr. J. G. Schaeffer, B.Sc., Provincial Sanitary Engineer, Regina, chairman; Dr. C. F. W. Hames, D.P.H., Provincial Department of Public Health, Regina; and Dr. G. R. Walton, D.P.H., Medical Officer of Health, Regina. Thanks are due also to Mr. A. T. Reid for his valuable assistance as presiding officer.

Manitoba: Dr. A. J. Douglas, Medical Officer of Health, Winnipeg, chairman; Mr. W. P. Brereton, C.E., City Engineer, Winnipeg; and Mr. John Foggie, Chief Sanitary Inspector, Provincial Department of Health and Public Welfare, Winnipeg.

Ontario: Mr. Hugh McIntyre, A.R.San.I., Provincial Sanitary Inspector, Kenora; and Dr. L. A. Pequegnat, Deputy Medical Officer of Health, City of Toronto. Mr. McIntyre served also as presiding officer. As chairman of the Ontario Examining Board, I am grateful also to the following members for their co-operation in the conduct of the oral examinations: Dr. R. D. Defries and Dr. N. E. McKinnon, School of Hygiene, University of Toronto; Dr. J. H. Laurie, Department of Public Health, City of Toronto; and Dr. J. T. Phair, Chief Medical Officer of Health for Ontario and Secretary of the Committee.

RECOMMENDATIONS

The Committee desire to recommend that the regulations and syllabus be revised to incorporate the following provisions or amendments:

1. All candidates must have attained the age of twenty years on the first day of the examinations. Certificates will not be granted to successful candidates until they have attained the age of twenty-one years.

2. The preliminary education requirement, as presented in regulation 2, part (2), which requires the candidate to have completed an acceptable type of secondary school education, shall be interpreted as meaning the successful completion of at least three years of high school or its equivalent in secondary school education.

3. Every candidate must produce evidence of experience in all branches of sanitary inspection. Such evidence must consist of one of the following:

(a) A certificate of having been employed for at least one year as a sanitary inspector in an organized department of health, and having experience in all branches of sanitary inspection.

OR

(b) A statement of field experience presented on the approved forms supplied by the Committee and signed by the medical officer of health under whose direction the work was conducted.

OR

(c) A certificate of having completed a special course of training in an institution approved by the Committee.

4. Every candidate is required to outline his studies, including attendance at lectures or courses, tutorial instruction, and his own reading. Such an outline should include also work done by the candidate in allied fields, courses of instruction or previous experience in work in any way associated with the duties of a sanitary inspector including building construction, draughting, laboratory work including bacteriology and chemistry, etc.

5. The Committee further recommend that the regulations and syllabus be printed in French and English, and that the examinations be conducted in French and English when requested.

J. G. CUNNINGHAM, *Chairman.*

REPORT OF THE COMMITTEE ON THE RURAL HEALTH CONSERVATION CONTEST

AS reported last year, the Association accepted the offer of the American Public Health Association to participate in the Rural Health Conservation Contest conducted by that organization with supporting funds from the Kellogg Foundation. An effort was made through the *Journal* and by correspondence with the provincial authorities and the unit directors to create interest in this project. Dr. James Wallace, Associate Field Director of the American Public Health Association, met the chief administrative officers of the various Provinces and visited many of the units during the year.

As previously stated, the object of this contest is to encourage the staff of the health unit to regularly review the local program in terms of accomplishments, to focus attention on aspects of the program which are not receiving the attention their importance warrants, and to stimulate community interest in the health services offered by the unit.

There were some forty-two full-time rural health units in Canada considered eligible for the 1938 contest. Thirty-five of these completed the requirements for admission. This extraordinary response was unique in the history of the contest and was repeatedly commented on by the Grading Committee of the contest, which Committee, being desirous of showing its appreciation of the interest shown by the Ministry of Health in Quebec, sent to the Minister of that Province a formal certificate of commendation. The awards for the 1938 contest are as follows:

Winning Unit: St. Jean-Iberville-Laprairie-Napierville Health Unit, St. Jean, Que., Dr. J. H. Maynard, D.P.H., Medical Officer.

Awards of Merit:

St. Maurice County Health Unit, Shawinigan, Que., Dr. A. Bossinotte, D.P.H., Medical Officer.

Terrebonne County Health Unit, St. Jerome, Que., Dr. L. R. Vézina, D.P.H., Medical Officer.

St. James-St. Vital Health District, St. James, Man., Dr. I. M. Cleghorn, D.P.H., Medical Officer.

Kamouraska-L'Islet County Health Unit, Ste. Anne de la Pocatière, Que., Dr. R. Deschênes, D.P.H., Medical Officer.

Nicolet County Health Unit, Nicolet, Que., Dr. Jean Paquin, D.P.H., Medical Officer.

Chateauguay-Huntingdon County Health Unit, Ste. Martine, Que., Dr. J. A. Patenaude, D.P.H., Medical Officer.

It is to be noted that the awards were made, with one exception, to the units in Quebec. While this was not unexpected, in view of the longer period of time since the unit program in that Province was initiated, it reflects great credit on those responsible for the administration of health affairs in the Province.

It is the hope of the Committee that the interest in the contest will be maintained during the year and that those participants this year who did not receive awards will be stimulated to further efforts; and that those who did not enter this year's contest will participate in the 1938 contest. The winners of this year's contest will have the opportunity, too, of maintaining their standing.

Expressions of appreciation of the contest have been received by the Committee, indicating that the value of the contest has been demonstrated. The Committee desires to convey to the American Public Health Association, and to the Kellogg Foundation, these expressions of appreciation.

J. T. PHAIR, *Secretary*. GRANT FLEMING, *Chairman*.

REPORT OF THE COMMITTEE ON HONORARY LIFE MEMBERSHIP

TO the list of distinguished leaders in public health who have been made recipients of honorary life membership in the Canadian Public Health Association the Committee has the honour to add the names of Dr. Seraphim Boucher, D.P.H., LL.D.; Dr. Alphonse Lessard, and Dr. H. E. Young, LL.D.

On his recent retirement from the office of Director of the Department of

Health of the city of Montreal, Dr. Boucher received many expressions of appreciation of his outstanding service in the cause of public health. When he entered the Department, the budget was small, the staff inadequate, and the activities limited largely to sanitation. When he retired, Montreal had a highly efficient department of health with activities in every field of public health. The advances are reflected in the vital statistics of Montreal. In 1913 the general death rate was 21.5 per 1,000 population; in 1936 it was 10.2. The infant mortality rate, when he assumed office, was 215, and on his retirement, 84. Such results stand as records of his achievements. From his graduation in medicine, he was interested in the fields of medicine related to public health. He served as a member of the faculty of Laval University, Montreal, as Professor of Bacteriology and Histology. He took an active interest in organized medicine, being one of the founders of Société Médicale of Montreal, and later served as Registrar of the College of Physicians and Surgeons of the Province of Quebec. His interest in infant welfare was early manifested, and he established the first baby health-clinic in Montreal in 1901. During his years of service, he served on numerous important commissions, both in Canada and abroad. In 1920 he was a delegate to the International Public Health Convention in Brussels and in 1926 he was a member of a group of public health experts who studied sanitary conditions in European countries. In 1934 McGill University conferred on him the degree of Doctor of Laws, honoris causa.

The name of Dr. Alphonse Lessard is intimately associated with the development of the full-time health unit movement in Quebec. Recognizing the limitations of the public health organization of the Province and the urgent need for more adequate health services, Dr. Lessard, on assuming the direction of the Provincial Bureau of Health in 1922, gave earnest consideration to the problem of improving health administration. The Province had been divided into health districts with full-time officers appointed by the Province, but this had proved unequal to the task. To meet the needs, Dr. Lessard introduced full-time county health units through the co-operation of the Rockefeller Foundation. From one unit in 1926, Quebec now has thirty-seven effective full-time health units. On his retirement in 1937 Dr. Lessard had the satisfaction of seeing the fruition of much of his efforts through the provision of travelling tuberculosis diagnostic clinics, enlarged sanatorium accommodation, an effective program of venereal disease clinics, and greatly reduced death rates from typhoid fever and diphtheria. This demonstration of the value of full-time health services provided by qualified personnel has meant much in the development of public health in Canada. His interests were not confined to the Province. To the Canadian Public Health Association he gave effective leadership both as a member of the Executive Council and as President of the Association in 1934. In the American Public Health Association he served on a number of important committees and as Vice-president.

As Dean of Canadian health officers Dr. H. E. Young is known for his effective leadership in public health not only in British Columbia, where he has

served as Provincial Health Officer since 1915, but also throughout Canada and the United States. Entering the Legislature of British Columbia in 1906, he was appointed Minister of Education and Provincial Secretary. Under his direction Dr. J. C. Fagan served as Secretary of the Provincial Board of Health. The rapidly developing Provincial Board of Health claimed the interest of Dr. Young and in 1916 he was appointed Secretary of the Board of Health and Registrar General of Vital Statistics. For more than thirty years Dr. Young has been responsible for the direction and development of the Board. Because of his keen interest in education, British Columbia was the first Province to provide a system of school medical inspection. Recognizing the value of full-time health services in rural areas, as had been demonstrated at that time in a few counties in the United States, Dr. Young organized the first county health unit in Canada at Saanich in 1921. British Columbia also had the honour of organizing, under his direction, the first public health nursing service in Canada, the first nurse having been appointed in 1917. The recent achievement of the organization of the Metropolitan Health Committee of Vancouver, affording adequate health services to the municipalities adjacent to Vancouver, was due largely to Dr. Young's effective leadership. Dr. Young has given generously of his time to the national voluntary health agencies in Canada and the United States. He served as President of the Canadian Public Health Association in 1920 and has been a member of the Executive Council for many years. The Victorian Order of Nurses, the Canadian Welfare Council, the Health League of Canada, the Canadian National Committee for Mental Hygiene, and other national bodies all owe a debt of gratitude to him for his interest and support. In the United States also his leadership has been recognized. He has taken an active part in the work of the American Public Health Association, serving as President of the Western Branch in 1937, and last year was honoured by the State and Provincial Health Authorities of North America in being elected President.

It is indeed fitting that the Canadian Public Health Association should honour these members with honorary life membership.

J. T. PHAIR, *Secretary, Executive Committee.*

THE NATIONAL HEALTH SURVEY IN THE UNITED STATES

A Review of the Reports of the Survey of 1935-36 as issued by the United States Public Health Service*

ARTHUR M. GOULDING, M.D.
Toronto

THE people of the United States and Canada, and especially the physicians, are indebted to the Roosevelt Administration for the National Health Survey. This survey, carried out under Works Progress Administration auspices during five months of the fall and winter of 1935-36, is the largest detailed health investigation ever undertaken. It involved a house-to-house canvass of 740,000 families in 84 cities in 19 States; and of 36,000 families in selected rural areas in 3 States. These 740,000 families included approximately 2,660,000 individuals, or 3.7 per cent. of the total urban population of the U.S.A. Because of the wide geographical distribution of the cities investigated, this 3.7 per cent. is probably a fair sample of the national urban population. In cities of over 100,000 a system of selected areas was followed. In cities of less than 100,000 the entire population was listed.

The field work was done by 7,000 investigators, all of whom were given preliminary training for the work and many of whom were already trained experts. The questionnaire form used resembles a combination of insurance application and income-tax form. It has 64 items, many of them further sub-divided. The information was carefully cross-checked, a process involving 350,000 special medical reports and 14,000 death certificates. The checked and approved data were then transferred to punch cards such as are used in modern statistical machines. There were 3,760,000 of these cards, each card carrying from 75 to 100 items of information.

The purpose of the survey was to relate economic status to the incidence of disease and to the available medical and nursing care. It was felt that "the true picture of care received in relation to needs can be obtained only through family reporting." The existing vital statistics, even when supplemented by data from life and accident insurance companies, did not begin to give a complete picture of accident and disease conditions in relation to the economic level.

The first preliminary report, which appeared in January of this year, gives "an estimate of the amount of disabling illness in the country as a whole". It has been quoted by many writers and speakers on medical subjects but will bear repetition. "Six million people in the U.S. are unable to work, attend school, or pursue other usual activities each day during the winter months on account of illness, injury or gross physical impairment resulting from disease or accident." The incidence of illness varied with the age-group, being highest, 1 in 8, among persons over 65, and lowest, 1 in 40, among the 15-to-24-year group. Children under 15 averaged about the same degree of health as that enjoyed by adults between 25 and 65. Of these six million persons, "approximately two and one half million, or 42 per cent., were disabled by chronic disease, or by permanent impairments the result of previous disease or accident. Injuries due to accidents accounted for disability in about half a million persons; acute infectious diseases were

**Reports subsequently published will be reviewed in an early issue.*

the cause of illness in about 250,000 persons, mostly children; and about the same number were disabled by acute disease of stomach, liver or appendix." Other acute disease, mainly respiratory, accounted for the disability of the remaining two and one half million persons. It makes an impressive total: about one-twentieth of the entire population sick every day of the year amounts to two and one-half billion days of serious illness per annum! The death rate is commonly regarded as a good measure of a country's health. This report shows sixteen cases of assorted illness lasting a week or more, for every death reported.

On the economic side it is found that the rate of chronic illness is three times as high among those on relief as it is among the rich: the term "rich" including the small group with family incomes from all sources in excess of $3,000 a year. There is not much difference between the sickness rate for those on relief and for those in the lower income bracket—$1,000 a year or less. Acute illness is more impartial, striking the poor only half again as often as the rich; but the inference to be drawn is that the lack of adequate medical and nursing care during acute illness allows more acute cases to pass into the chronic stage. We may also conclude that the unskilled worker who most needs good health to support himself and his family is least likely to possess it.

As might be expected, the record of medical and nursing care available for the poor shows great variation in different parts of the country. In the larger cities the hospitals give almost as good service to the poor as to the rich; if we exclude that luxury known as "private nursing", where the ratio between rich and poor is as one to twelve. But in smaller towns, and in the rural areas where more than half the total population still lives, medical and nursing services are very inadequate. Eighteen million people live in rural counties that have no hospitals.

A reasonable conclusion from the first two reports is that it pays to be born into "comfortable circumstances": you have twice the chance of a long life and three times the chance of a healthy one.

The third report deals with "Accidents as a Cause of Disability". The chief surprise here lies in the group of home accidents, a new field of investigation which seems to bear out the statement that "home is the place where you slip in the bath-tub and break your neck." In the number of accidents resulting in disability for a week or more the home ranks first with one-third of the total. Industry accounts for nearly one-third; automobiles for one-fifth; and "all other" for the remainder. In the matter of permanent impairment resulting from accident, industry still holds first place with one-half the total. Industrial machines most commonly involve hand or arm; while our modern transportation machines—automobiles, motorcycles and trains—account for the majority of injured feet and legs. "About 30,000 accidents occur daily in the U.S.A., which gives an annual total of ten million. These accidents account for 8.5 per cent. of all illnesses disabling for a week or longer. As a cause of disability, accidents were exceeded only by influenza and grippe in annual frequency of occurrence." Nearly 7 per cent. of all deaths are the result of accidental injury, and "the annual mortality rate from accidents in the country at large exceeds that of any nation in the civilized world."

Even in accidents the poor are at a special disadvantage, especially in accidents which occur in the home. The rate is 43 per cent. higher among relief families than among the rich. Since most serious home accidents are due to falls, and since relief housing conditions are seldom good, especially as regards lighting, stairs and furniture, this finding is no surprise. It affords one more argument in favour of gov-

ernment housing projects. Homes safe to live in are too expensive a luxury to be provided for low income workers by private enterprise.

The fourth report deals with the "Prevalence and Causes of Orthopedic Impairments".

It is estimated that 2 per cent. of the population have a permanent physical impairment of a serious nature. Of the two and one-half million persons so affected, more than half a million are "incapacitated". This word is defined as meaning a long-term disability averaging 326 days in a 12-month period. The age distribution shows 210,000 children under 15 years of age; nearly two million between 15 and 64; and half a million over 65. As a result of these impairments, a minimum of 170 million days a year is lost from work or school. These orthopaedic conditions are nearly three times as common among relief recipients as among the rich. One-third are caused by accidents while at work; one-third by disease, mainly apoplexy, poliomyelitis, and arthritis; and only 5 per cent. are congenital. Among adults over 15 years, apoplexy is the most important single disease cause, ranking just after occupational and home accidents.

Two other bulletins have been published dealing with non-medical topics. The one gives the "Occupational Class of the Family Wage Earner", and is a mass of economic data that needs an expert to interpret. The only obvious fact that stands out is that in the majority of cities, large and small, more than a quarter of the workers are engaged in distribution and salesmanship jobs. In cities where there are large manufacturing industries—Detroit, Chicago and Cleveland, the ratio of skilled and semi-skilled workers rises at the expense of the more parasitic groups engaged in selling goods. But these same production centres are more subject to violent fluctuations in employment, as is shown not only by these statistics but by the deplorable conditions existing to-day in Cleveland and Chicago.

The sixth bulletin deals with "Families Distributed by Income", the income being that for 1935. In the 52 cities of less than 100,000, the proportion on relief varied from around 10 per cent. for the white to over 50 per cent. of the coloured population. Of those not on relief, from 25 per cent. to 40 per cent. had family incomes of $1,000 or less; while only 2.5 to 4 per cent. of the families were over the $3,000 level, and 0.4 to 2 per cent. had $5,000 or over. In the South, the difference between white and coloured was more marked: up to 90 per cent. of the coloured families being under $1,000 a year. In the larger cities over 100,000, the general income level was higher, even for such of the coloured as were still in work. But unemployment has hit the northward-migrating Negro especially hard. All the north-central and north-eastern cities have an abnormally high proportion of their coloured populations on relief. It seems clear that one is better off as a citizen of the U.S.A. if one is white and lives in a big city in the Northern States. Even at that, the chances for a full life were not too good in 1935-36, and conditions have become materially worse since then.

From the reports so far published, there seem to be at least three obvious conclusions to be drawn. First, that there is a vast amount of serious illness among city and country workers that receives little publicity, less treatment, and practically no prevention. Second, that the home as a centre of illness and injury has been much underrated. Both doctors and nurses, private and public, have here a wide field for the best service they can offer. Third, with only about 2 per cent. of the population in the $3,000-a-year class and with half the remainder at or below the $1,000 level and so quite unable to pay for services rendered, the question of a new and improved financial set-up for the medical and nursing professions is one which presses most urgently for a solution.

BOOKS AND REPORTS

The Biology of Pneumococcus. *Benjamin White, Ph.D., with the collaboration of Elliott Stirling Robinson, M.D., Ph.D., and Laverne Almon Barnes, Ph.D. The Commonwealth Fund, New York, 1938. 799 pages. $4.50.*

A STATEMENT in the foreword of this book adequately describes its nature: "The whole storehouse has been ransacked for hidden or forgotten goods in order to sort out the accumulation of more than fifty years." The authors undertook a great task, which they have accomplished with signal success, especially in making available the vast fund of knowledge of the pneumococcus. In so doing they have referred to 1,593 papers, which in itself indicates how extensively they have ransacked the storehouse. A critical appraisal of the papers reviewed has not been attempted.

The contents of the book are conveniently arranged into seventeen chapters with a most useful appendix dealing with media, isolation of pneumococcus, type determination, serological reactions, potency tests of antipneumococcic serum, and preparation of diagnostic antipneumococcic rabbit serum.

The book is written in a most pleasing style and is a veritable encyclopaedia of the pneumococcus. One has no hesitation in saying that it should be in the library of every medical faculty.

M. H. Brown

Hospital Care Insurance. *C. Rufus Rorem, Ph.D., C.P.A. Published by the American Hospital Association, 18 East Division Street, Chicago, Ill., 1937. 71 pages. 50 cents (paper).*

THIS publication by Dr. Rorem, director of the Committee on Hospital Service of the American Hospital Association, embodies an historical and critical review of group-hospitalization plans. With a background of the development and recognition of the periodic-payment plan for the purchase of hospital care in the United States, the author discusses concisely the contribution of group hospitalization to social welfare and basic aspects of such provision. Special problems of organization and administration such as scope of hospital benefits, dependent coverage, public relations, types of illness covered, etc., are reviewed. The procedure in establishing a subscription rate is set out also.

Appendices contain exhibits of forms used in group-hospital plan administration, as well as legislation and samples of typical group hospital service plans. Statistics on the growth and present enrollment in non-profit free-choice hospitals plans are included.

The influence of group-hospitalization plans upon the employer, hospitals and upon medical service is significant indeed. The unpredictable nature of illness makes some provision necessary in order to protect the individual from the risks of unusual demands on his budget, for medical care. "The hospital service required by an individual cannot be predicted, but the amount of hospital care necessary for a large group of persons can be estimated with reasonable accuracy." The general principle of insurance is recognized as a satisfactory method of eliminating the uncertainty for the individual and providing for sickness costs for the group.

A. Hardisty Sellers

Juvenile Paresis. *William C. Menninger, M.D. The Williams & Wilkins Company, Mount Royal and Guilford Avenues, Baltimore, Md., 1936. 199 pages. $3.00.*

THE subject of juvenile paresis has received very little attention and this book is the first one to consider the disease in all its aspects. The author

uses 43 cases which he has studied and 610 cases from the literature, and brings together practically all the known facts about this type of syphilitic brain infection which develops in certain cases of congenital syphilis.

Juvenile paresis constitutes about 2 per cent. of all cases of general paresis; and about 10 per cent. of cases of congenital syphilis develop late neurosyphilis. The condition is slightly more common in males and 68 per cent. develop between the ages of 9 and 18 years. In 40 per cent. of the cases feeblemindedness was demonstrated before onset. In one-half of the cases the physical development was normal while the remainder usually showed arrest of growth and abnormalities in proportion.

The most common mental picture is one characterized by confusion, mental regression to simple dementia, inadequate emotional responses and restless purposeless behaviour. The onset of the condition was found to be in most cases slow and insidious. The course was remarkably uniform and death resulted in an average of four to five years. The treatment was disappointing, only 10 per cent. showing marked improvement and 23 per cent. slight improvement.

In this book is a wealth of information on a rather uncommon condition.

G. E. Hobbs

The Control of Syphilis and Other Infectious Diseases. *Lectures on the epidemiology and control of syphilis, tuberculosis, and whooping cough, and other aspects of infectious disease. Thorvald Madsen, M.D., Chairman of the Health Committee of the League of Nations. Williams & Wilkins Co., Baltimore, Md. 216 pages. $3.00.*

THIS book contains the text of the Abraham Flexner lectures, delivered by Dr. Thorvald Madsen at Vanderbilt University early in 1937. Dr. Madsen's accomplishments and leadership in public health and preventive medicine are sufficient to commend these lectures to every student in these fields.

The first lecture deals with the control of venereal diseases in Denmark with special reference to syphilis, and is of interest in view of the marked decline in the observed incidence of venereal diseases there during the last 10 years. The administrative measures of control in force in Denmark are outlined, as well as the system of follow-up which is maintained and the details regarding therapy. It is pointed out that the incidence of syphilis and gonorrhea is declining rapidly in Copenhagen while remaining about the same in rural areas.

In the third lecture on "Tuberculosis in Denmark", the author discusses the legislative and economic provisions for the control of the disease and the incidence of tuberculosis with special reference to the findings of the tuberculin test. Since 1905 all treatment has been free to persons earning not more than $900 a year. The provision of substantial financial support to all patients suffering from active pulmonary tuberculosis is significant. In respect to prevention of the spread of infection, Dr. Madsen points out that there is provision that all teachers must secure a medical certificate to the effect that they are not suffering from infective tuberculosis before applying for a post. In the event of dismissal upon contracting tuberculosis, a two-thirds pension is provided. This provision also applies to other groups.

Included in this third lecture also is an interesting discussion of the incidence of bovine and human tuberculosis. Dr. Madsen concurs in the present consensus that persons who are tuberculin-positive are better protected against subsequent infection than those who are negative. He expresses the belief that the Calmette-Guérin method of inoculation has a part to play in the control of tuberculosis, and that in medical students and nurses, for ex-

ample, it will be proper to vaccinate those who are tuberculin-negative. In view of the declining incidence and death rate from tuberculosis and the increasing proportion of persons reaching adult life who are tuberculin-negative, Dr. Madsen's comments in this respect are highly significant.

In the three other lectures are discussed "The Mechanism of Bacterial Infection", "The Influence of Seasons on Infection", and "Whooping Cough".

A. Hardisty Sellers

Social Security in America. *Published for the Committee on Economic Security by the Social Security Board, Washington, D.C. United States Government Printing Office, Washington, 1937. 592 pages. 95c (paper).*

THIS VOLUME constitutes a summary of special reports to the Committee on Economic Security, and gives the factual background of the Social Security Act. The book is divided into six parts dealing in turn with unemployment compensation, old-age security, security for children, provisions for the blind, the extension of public health services, and the need for federal support of social security programs.

Each of the various chapters provides a detailed summary of the problem under discussion. The section on unemployment compensation includes a digest of various experiments in this field, estimates of unemployment in the United States, the actuarial basis for and the role of the federal government in unemployment compensation, as well as structural provisions in unemployment insurance and compensation.

The other sections of the document, as well, may be described as exhaustive in their scope and present a valuable source of information. In the appendices are included the procedures followed in estimating unemployment compensation coverage in the United States, duration of unemployment, maximum duration of benefits, etc. Here are to be found also a summary of state unemployment compensation laws, the provisions of the unemployment and Social Security Act, old age and insurance in Great Britain, Canadian pensions systems, and survivor insurance in various countries. One of the appendices gives a financial history of the workers' invalidity, old age and survivor insurance in Germany. The last appendix to the document contains the text of the Social Security Act.

A. Hardisty Sellers

Tuberculosis Education. *Elma Rood. Rural School Press, Madison College, Tennessee, 1936. 125 pages. $2.00.*

IT IS fully recognized that an educational program is essential in tuberculosis prevention and control. It is recognized, too, that such a program must be continued year after year, varying the methods and approaches as people change their attitudes. The success of a program may be judged by the increased interest of the community in the problem of tuberculosis and an increased number of requests for certain tuberculosis-preventive services.

Elma Rood has presented a series of thirty short articles on tuberculosis which may be used by medical officers of health and public health nurses in school education, in newspapers, or for radio presentation. The articles bear such titles as "What is Tuberculosis?", "How is Tuberculosis Diagnosed?", "What Are Some Ways of Treating Tuberculosis?", and "How Can Tuberculosis Be Prevented?" Material for use in an educational program, including statistical charts, exhibits, films and slides, and suitable playlets, is discussed. The book will be found to be very helpful.

R. D. Defries